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MEDRI2025

SECOND INTERNATIONAL CONFERENCE ON TEACHING AND LEARNING IN MEDICAL EDUCATION

27 – 29 NOVEMBER 2025

WITH

SECOND INTERNATIONAL STUDENT SYMPOSIUM ON FUTURE DOCTORS EDUCATING THE WORLD

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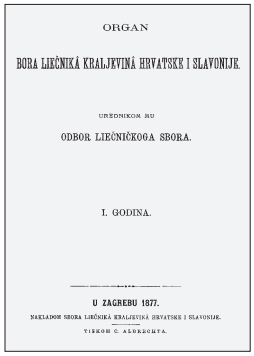
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I. GODINA.

U ZAGREBU 1877.

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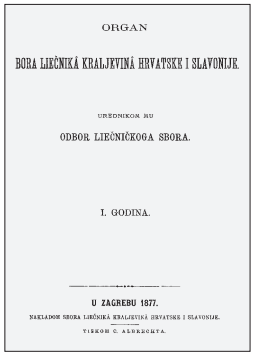
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Description

The Croatian Medical Association started publishing its professional journal *Liječnički Vjesnik* in 1877. *Liječnički Vjesnik* is one of only about a hundred international journals that were coming out in the late 19th century, maintained continuity during the 20th century, and then entered the 21st century. It is also the oldest Croatian medical journal and regularly captures all important achievements, professional and trade events. Editorials, professional and scientific papers, review articles, patient reviews, medications and methods, preliminary scientific and expert papers, reviews, letters to the editor, book reviews, literature papers and other contributions are published in the journal *Liječnički Vjesnik*. Through publishing original scientific and professional papers by local authors, *Liječnički Vjesnik* has contributed to the overall health care improvement. All manuscripts are subjected to a review process. All articles should be addressed to the Croatian Medical Association, Office of Liječnički Vjesnik, Zagreb, Šubićeva 9, tel. (01) 46-93-300, e-mail: lijecnicki-vjesnik@hlz.hr.

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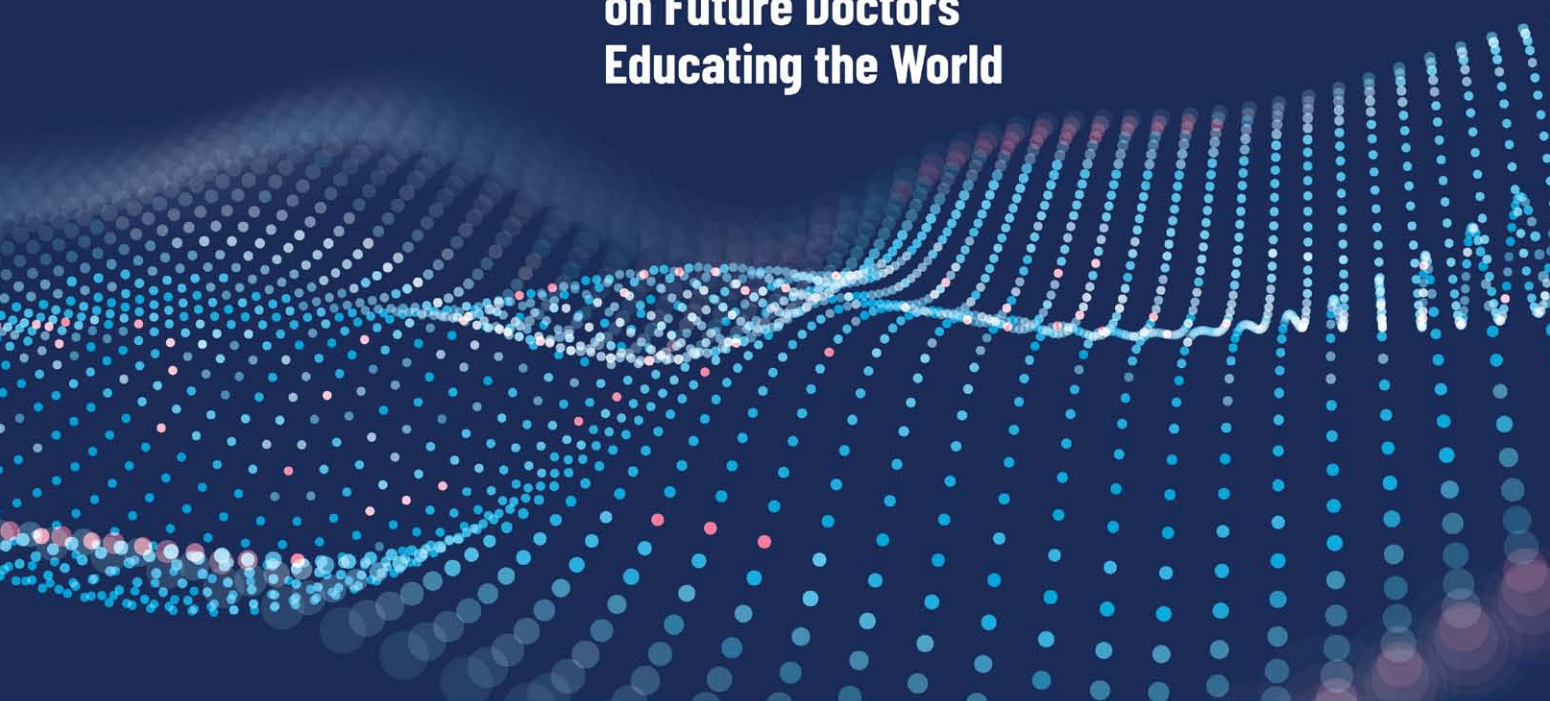

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SECOND INTERNATIONAL STUDENT SYMPOSIUM ON FUTURE DOCTORS EDUCATING THE WORLD

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SECOND INTERNATIONAL CONFERENCE ON TEACHING AND LEARNING IN MEDICAL EDUCATION

WELCOME NOTE

Dear colleagues,

It is with great honour and genuine pleasure that we present the Book of Abstracts of MEDRI 2025 – The Second International Conference on Teaching and Learning in Medical Education, hosted by the Faculty of Medicine in Rijeka.

From 27 to 29 November 2025, at the Hotel Ambasador in Opatija, and on the occasion of the 70th anniversary of our Faculty, we had the privilege of welcoming more than 500 participants from five countries – Croatia, Slovenia, Bosnia and Herzegovina, the United States of America, and Australia. Their presence and engagement confirmed the growing international relevance of MEDRI and the shared commitment to advancing excellence in medical education.

As the only professional and scientific conference in Croatia and the wider region dedicated exclusively to higher medical education, MEDRI brings together all key stakeholders, from decision-makers and institutional leaders to medical teachers and students. The co-organisers included the Croatian Medical Chamber, the Croatian Medical Association, the Faculty of Medicine in Maribor and Mostar, the University Hospital Centre Rijeka, and the University of Rijeka, with the support of more than 20 partner institutions, including the Faculties of Medicine in Zagreb, Split, and Osijek, as well as the Catholic University of Croatia. The conference was held under the patronage of the Ministry of Science, Education and Youth and the Ministry of Health. This collective support reflects a shared vision: that through cooperation, expertise, and regional solidarity, we can significantly enhance both the quality and international visibility of medical education.

This year's theme, *FUTUREMED: Transformative Era of Higher Education*, invited us to reflect on the profound changes shaping our academic and professional environments. Across three dynamic days, the programme included 27 thematic sessions, more than 90 lectures, 12 workshops, and 10 panel discussions, delivered by 144 distinguished speakers. We were particularly honoured to welcome Professor Lynn Monrouxe from the University of Sydney as our keynote speaker, whose expertise and leadership in medical education provided both inspiration and intellectual depth to the conference.

The discussions addressed some of the most pressing challenges facing our institutions today: digital transformation and the support structures required to sustain it; the professional development of medical educators; the recognition of medical education as an autonomous scholarly field; and the alignment of our faculties with international accreditation standards of the World Federation for Medical Education. Importantly, the conference also showcased innovative advances in digital publishing through seven multimedia educational publications developed by the Centre for the Improving Teacher Competencies at the Faculty of Medicine in Rijeka.

A particularly significant outcome of MEDRI 2025 was the working meeting of the Deans of the Faculties of Medicine in Rijeka, Zagreb, Split, Osijek, Maribor, and Mostar, held in collaboration with the Organising Committee. This meeting resulted in an agreement to establish a regional network for medical education, fostering sustained cooperation among medical faculties and professional organisations across Croatia and neighbouring countries. The announcement of joint project initiatives and the forthcoming MEDRI 2027 further confirmed that MEDRI is not merely a conference, but a platform for long-term strategic collaboration.

In parallel with the main programme, the Second International Student Symposium on *Future Doctors Educating the World* demonstrated the remarkable engagement and leadership of our students. Supported by numerous student organisations, the symposium affirmed that the future of medical education is already being actively shaped by the next generation of physicians.

Following the success of the inaugural conference in 2023 and the even greater impact of this year's edition, MEDRI has firmly established itself as the central regional event dedicated to the advancement and international recognition of medical education.

We extend our sincere gratitude to all participants, speakers, partners, and students whose expertise, enthusiasm, and commitment made MEDRI 2025 possible. It is our hope that the contributions collected in this Book of Abstracts will inspire further research, dialogue, and collaboration in the transformative era of higher education.

With collegial regards,

Presidents of the Organising Committee

Nina Pereza, MD, PhD, associate professor
Head, Centre for Improving Teacher Competencies
and Communication Skills, Faculty of Medicine in Rijeka

Goran Hauser, MD, PhD, professor
Dean, Faculty of Medicine in Rijeka

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Second International Conference on Teaching and Learning in Medical Education

Session C2.
EVIDENCE-BASED MEDICAL EDUCATION: WHY EDUCATIONAL RESEARCH MATTERS?

RESEARCHING HEALTHCARE PROFESSIONS EDUCATION: WHY BOTHER?

Lynn Monrouxe[1-5]

[1] The University of Sydney, Faculty of Medicine & Health, School of Health Sciences, Professor of Healthcare Professions Education Research, Australia
[2] Chang Gung University, Adjunct Professor of Medical Education, Taiwan (ROC)
[3] The University of Kelaniya, Adjunct Professor to the Department of Medical Education, Sri Lanka
[4] Frontiers, Frontiers in Medicine, Specialty Chief Editor for Healthcare Professions Education
[5] Wiley Blackwell, Medical Education, Deputy Editor

Corresponding author: lynn.monrouxe@sydney.edu.au

Around 82,000 medical education-focused articles were published in over 4,000 different journals between the years of 1960 and 2010, with an 8-fold annual increase over time. In 2014, over 1,500 manuscripts were submitted to the top international journal *Medical Education* alone: a 53% increase since 2007. And this trend continues in educational research across the healthcare professions more generally. But healthcare professions education research suffers from being the poor relation to healthcare research, attracting relatively little funding and kudos it has been labeled the "*ugly duckling* of the medical world". So why do we bother? In this talk, Lynn will explain why she thinks healthcare professions education research is just as important as clinical research. In doing so she will define what healthcare professions education research is, talk about who undertakes healthcare professions education research, and explaining how and why healthcare professions education research can really make a difference: for healthcare professionals themselves, for organisations, as well as for patient care quality. Following this, she will encourage you to think about researching your own healthcare professions education interests by considering the kinds of research questions that might be of interest to medical educationists locally, nationally and internationally.

Keywords: Educational Research; Healthcare Professions Education; Medical Education

EVIDENCE-BASED MEDICAL EDUCATION: INTRICATE SCIENCE BEHIND INTUITION

Nina Pereza[1,2]

[1] University of Rijeka, Faculty of Medicine, Centre for Improving Teacher Competencies and Communication Skills, Rijeka, Croatia
[2] University of Rijeka, Faculty of Medicine, Department of Medical Biology and Genetics, Rijeka, Croatia

Corresponding author: nina.pereza@uniri.hr

The concept of evidence-based medical education (EBME) is increasingly recognised as a cornerstone of modern higher education, guiding the development of teaching and learning practices in medicine. While intuition, experience, and professional judgment have always played an essential role in how medical teachers educate future healthcare professionals, EBME highlights that even these intuitive decisions can - and should - be systematically understood, supported, and refined through scientific evidence. Without a structured and evidence-based framework they risk becoming subjective, inconsistent, or less effective. In addition, EBME reminds us that education, like medicine itself, has a rigorous scientific foundation - one that is too frequently overlooked in favour of tradition, habit, or personal preference, even though it directly influences both learning outcomes and patient care. However, EBME does not suppress intuition but rather elevates it by revealing the science, cognitive mechanisms, and pedagogical theories that underpin effective educational decisions, enabling teachers to make informed and deliberate choices with confidence, such as selecting evidence-based content, applying

validated teaching methods, and continually evaluating outcomes. In modern medical education, intuition is informed, deliberate, and integrated into a scientific framework rather than improvised or assumed, which is emphasised by numerous unsuccessful curriculum reforms that have demonstrated that relying on subjective opinions alone is insufficient. Unfortunately, educational research is too often perceived as secondary to basic and clinical research, despite being crucial for preparing competent, reflective, and safe healthcare professionals.

The aim of this presentation is to introduce the EBME concept and illustrate its implementation at the Faculty of Medicine in Rijeka, where educational practice is being transformed through innovative and scientifically grounded approaches. Selected examples include a clinical reasoning and a clinical skills course for medical students (Medical Genetics, Clinical Propedeutics), and a faculty development programme Modern and Practical Medical Education. These examples highlight numerous pedagogical innovations and the digital transformation introduced at the institution, including case-based learning, flipped classroom methodology, competency-based assessment, contemporary standards of clinical teaching, and faculty development. Finally, the presentation highlights the role of the Centre for Improving Teacher Competencies and Communication Skills, the institutional unit responsible for the implementation of the EBME concept across the Faculty.

Keywords: Evidence-Based Medical Education; Educational Research; Faculty Development; Healthcare Professions; Intuition; Medical Education

Session C5.
UNDERSTANDING THE SPECIFICITIES OF GENERATION Z

UNDERSTANDING THE SPECIFICITIES OF GENERATION Z

Danijela Lucić

University of Zagreb, Faculty of Humanities and Social Science, Sociology Department, Zagreb, Croatia

Corresponding author: dalucic@m.ffzg.hr

The aim of this presentation is to provide an overview of the main characteristics and social implications of Generation Z, based on international and Croatian research, and to discuss their relevance for education, employment, and intergenerational cooperation. Generation Z, or "zoomers", born approximately between 1995 and 2012, is the first generation that has never experienced a world without the internet. Growing up in a fully digitalized and globalized environment has shaped their values, communication preferences, and expectations. Research consistently shows that this cohort is highly self-aware, pragmatic, and places strong emphasis on authenticity, inclusiveness, and diversity. They are sceptical of rigid hierarchies and traditional institutions, and they demand flexibility both in education and in the workplace. They prefer experiential and practical learning, and they value meaningful work, financial security, and work-life balance. In Croatia, findings further emphasize their specific career expectations. Generation Z tends to value autonomy, managerial competence, and entrepreneurial creativity more than older cohorts, while remaining sceptical toward human resources systems, which they often perceive as reactive and administrative rather than supportive of long-term career development. Research on Croatian youth also indicates a growing dissatisfaction with the quality of education and concerns about integrity in higher education. They highlight a mismatch between qualifications and labor market opportunities, while at the same time relying heavily on digital tools and non-formal online learning to complement their formal education. Although frequently labelled as "lazy" or "spoiled" by older generations, many members of this cohort have transformed their digital skills and even their so-called "dependence" on technology into innovative business models and careers. In Croatia, as elsewhere, they articulate clear expectations from both employers and educational institutions and actively seek environments that meet these expectations. This presentation emphasizes that fostering intergenerational dialogue and understanding is essential for harnessing the potential of Generation Z and for building more flexible, inclusive, and future-oriented social structures.

Keywords: Career Development; Communication; Education; Employment; Generation Z; Students

RELATIONSHIP BETWEEN PERSONALITY TRAITS, EMOTIONAL INTELLIGENCE, AND ACADEMIC SUCCESS

Darija Cigić[1], Jagoda Čuvalo[2], Jelena Ivelić[2], Antonio Sesar[3], Katarina Cvitković[3], Ivan Ćavar[3]

[1] University of Mostar, Faculty of Health Studies, Mostar, Bosnia and Herzegovina
[2] University of North, Koprivnica, Croatia
[3] University of Mostar, School of Medicine, Mostar, Bosnia and Herzegovina

Corresponding author: ivan.cavar@mef.sum.ba

Aim: This study aimed to examine the impact of personality traits and emotional intelligence on academic success.

Materials and Methods: The research was conducted among 260 fourth-grade students (58 male and 202 female) from two high schools in the southern region of Bosnia and Herzegovina. The Sixteen Personality Factor Questionnaire (16PFQue) was used to assess personality traits, and the Trait Emotional Intelligence Questionnaire (TEIQue) was used to measure emotional intelligence.

Results: Anxiety and self-sufficiency were the most prevalent traits among students. Tough-mindedness was significantly more pronounced in students with an average grade of "excellent" compared to those with an average grade of "good." Conversely, sensitivity and tension were significantly more common among students with an average grade of "good" compared to those with an average grade of "excellent." Tough-mindedness showed a positive correlation with academic success, while anxiety, liveliness, sensitivity, apprehension, openness to change, and tension were negatively correlated. No significant differences in emotional intelligence were observed between the groups.

Conclusion: Our findings suggest that certain personality traits may have a significant impact on academic success, whereas emotional intelligence appears to have no effect. However, future multicenter studies with larger cohorts are warranted to further clarify the role of personality characteristics and emotional intelligence in academic achievement.

Keywords: Academic success; Emotional intelligence; Personality traits; Students

TEACHING SOFT SKILLS IN THE DIGITAL AGE: HOW TO HUMANIZE MEDICAL EDUCATION FOR GENERATION Z

Tatjana Čulina[1,2]

[1] Teaching Institute of Public Health of Primorje-Gorski Kotar County, Department of School and Adolescent Medicine, Rijeka, Croatia
[2] University of Rijeka, Faculty of Medicine, Department of Family Medicine, Association of Teachers in General Practice/Family Medicine, Rijeka, Croatia

Corresponding author: tatjana.culina@uniri.hr

In the context of increasingly complex challenges in medical education – particularly in working with Generation Z students – it is essential to redefine pedagogical strategies aimed at fostering professional competencies that encompass emotional as well as cognitive dimensions. The objective of this presentation is to underscore the significance of integrating soft skills into the medical curriculum, with particular focus on emotional literacy, empathic communication, interpersonal competence, and the formation of professional identity. Generation Z is marked by a high degree of digital fluency, constant immersion in virtual environments, and a preference for rapid, visual modes of communication. However, they also exhibit heightened psychological vulnerability, emotional disorientation, limited socio-emotional competencies, and a growing prevalence of loneliness and anxiety. Within this context, it is imperative that educators not only possess subject-matter expertise but also demonstrate the ability to create psychologically safe learning environments that promote authentic communication, emotional mirroring, and the cultivation of trust. The traditional role of the teacher as the sole transmitter of knowledge has shifted toward that of a mentor who facilitates the development of clinical reasoning, emotional self-reflection, and effective patient-centered communication. This paper outlines concrete pedagogical strategies such as facilitating reflective dialogue, role-play, nonverbal communication analysis, and supporting students in recognizing and articulating their own emotional responses. The educator's role extends beyond content delivery to modeling professional behavior aligned with the principles of emotional intelligence. Particular

emphasis is placed on the importance of active listening, nonverbal sensitivity, and empathic responsiveness as foundational clinical competencies in contemporary medical practice. In conclusion, without systematic instruction in and cultivation of soft skills, future physicians may become technically proficient yet emotionally disengaged – compromising both the therapeutic alliance and the overall quality of care. Rather than fearing the technological adeptness of newer generations, educators should recognize that their greatest asset lies not in digital expertise but in life experience, emotional maturity, and the capacity to guide students in the development of their professional identity through genuine human connection, critical inquiry, and ethical reflection.

Keywords: Empathy; Emotional Intelligence; Generation Z; Interpersonal Communication; Medical Education

Session C6.
DIGITAL INNOVATIONS FOR INTERACTIVE LEARNING

ONLINE PLATFORMS FOR INTERACTIVE LEARNING: COMPARISON, POSSIBILITIES AND ADVANTAGES

Lara Saftić Martinović

University of Rijeka, Faculty of Medicine, Department of Medical Biology and Genetics, Rijeka, Croatia

Corresponding author: lara.saftic.martinovic@medri.uniri.hr

The aim of this presentation is to examine the use of online platforms for interactive learning, with a focus on their comparative features, possibilities, and educational benefits. Online platforms increasingly serve as essential tools in higher education by offering flexible access, diverse resources, and opportunities for active engagement. Through a comparison of widely used solutions, attention is given to aspects such as accessibility, user experience, integration of multimedia, and support for collaborative learning. Emphasis is placed on the interactive elements such as real time communication, gamification, adaptive feedback, and group work that transform traditional learning into a dynamic, student-centred process. These features not only enhance motivation and participation but also contribute to deeper understanding and long-term knowledge retention. The possibilities of online platforms extend to personalized learning pathways, continuous assessment, and bridging formal with informal education, making them adaptable to a broad range of disciplines. Despite challenges such as technological requirements and the need for pedagogical redesign, the advantages of inclusivity, scalability, and adaptability highlight their growing importance. In the presentation, examples will be given of platforms already in use, such as Moodle and its national version Merlin, as well as tools that foster active participation like Kahoot and global resources such as Coursera, to illustrate how different types of platforms complement one another in supporting medical education.

Keywords: Computer-Assisted Instruction; Educational Technology; Medical Education; Online Systems

NEXT-GEN MEDICAL EDUCATION: INP'S DIGITAL SOLUTION FOR TEACHING AND LEARNING

Goran Hauser[1,2]

[1] University of Rijeka, Faculty of Medicine, Department of Internal Medicine, Rijeka, Croatia
[2] Clinical Hospital Centre Rijeka, Clinic for Internal Medicine, Rijeka, Croatia

Corresponding author: goran.hauser@uniri.hr

The growing complexity of medical education and the need for efficiency, transparency, and student-centred learning have led the Faculty of Medicine, University of Rijeka, to develop INP – an integrated digital platform that supports and enhances all aspects of teaching and learning. This institution-wide solution addresses

challenges in academic organisation, clinical training, quality assurance, and communication between students and faculty. INP consolidates classroom administration, timetable coordination, syllabi for all study programmes, and lecture room reservations into a single environment. It further supports clinical education through a digital clinical skills logbook, structured assessment tools, and fully digitalised Objective Structured Clinical Examinations (OSCEs). Additional modules include student assistant management, mass mailing, teaching evaluation and quality assurance questionnaires, short formative quizzes, and an AI-assisted tool for generating and refining learning outcomes to ensure alignment with competency-based standards. The system provides separate, role-specific interfaces for students and teachers, optimising usability and access to relevant information. Since its implementation, INP has been adopted across all programmes and is actively used by students and academic staff. Preliminary feedback indicates improved efficiency in course coordination, reduced administrative workload, and greater transparency of academic requirements. Teachers report enhanced monitoring of student progress, particularly in clinical skills acquisition and OSCE readiness, while students benefit from centralised access to syllabi, schedules, evaluation results, and learning resources. Early data also show increased completion rates of teaching evaluations, facilitating more systematic quality assurance and curriculum improvement. The AI-supported learning outcome tool has contributed to more consistent, measurable, and pedagogically sound course documentation. The development of INP demonstrates how a locally designed digital ecosystem can meet the specific needs of a medical faculty while aligning with global trends in digital transformation and outcome-based education. Future directions include integration with hospital information systems, analytics-driven curriculum planning, and expansion of AI-assisted tools for teaching and learning. By presenting this solution, we highlight the potential of institution-specific digital platforms to foster innovation, enhance accountability, and support the next generation of healthcare professionals.

Keywords: Competency-Based Education; Digital Learning Platform; Integrated Information System; Medical Education; Teaching and Learning Innovation

Session C7.
INNOVATIONS IN AUTHENTIC LEARNING METHODS IN MEDICAL EDUCATION

PROBLEM BASED LEARNING

Radovan Hojs

University of Maribor, Faculty of Medicine, Maribor, Slovenia

Corresponding author: radovan.hojs@um.si

The McMaster University Faculty of Health Sciences established in late 1960s a new educational approach now known the world around as problem-based learning (PBL). At about the same time, the College of Human Medicine at Michigan State University implemented a problem-solving course. In the early 1970s newly created medical schools in Maastricht (the Netherlands) and in Newcastle (Australia) also developed PBL curricula. PBL is nowadays used in many medical schools worldwide. The main characteristics of PBL are: learning is student-centred, learning occurs in small student groups, teachers are facilitators, problems form the organizing focus and stimulus for learning and are a vehicle for the development of clinical problem-solving skills, new information is acquired through self-directed learning. In PBL students use "triggers" from the problem case or scenario to define their own learning objectives. Subsequently they do independent, self-directed study before returning to the group to discuss and refine their acquired knowledge. Thus, PBL is not about problem solving per se, but rather it uses appropriate problems to increase knowledge and understanding. The process is clearly defined, and the several variations that exist all follow a similar series of steps. Steps in PBL tutorial process are:

1 – identify and clarify unfamiliar terms presented in the scenario;

2 – define the problem or problems to be discussed;

3 – "brainstorming" session to discuss the problem(s), suggesting possible explanations on basis of prior knowledge;
4 – review steps 2 and 3 and arrange explanations into tentative solutions;
5 – formulate learning objectives;
6 – private study (all students gather information related to each learning objective);
7 – group shares results of private study (students identify their learning resources and share their results).

Group learning facilitates not only the acquisition of knowledge but also several other desirable attributes, such as communication skills, teamwork, problem solving, independent responsibility for learning, sharing information, and respect for others.

The aim of this presentation is to present theoretical basis of PBL and its use at Faculty of Medicine University of Maribor.

Keywords: Curriculum; Education; Problem Based Learning; Teaching Methods

CLINICAL PEER TEACHING

Sebastjan Bevc

University of Maribor, Faculty of Medicine, Maribor, Slovenia

Corresponding author: sebastjan.bevc@um.si

Clinical peer teaching is an innovative and increasingly valued aspect of medical education in medical schools. This approach is based on the principle that students, particularly those in higher years of study, can effectively teach and mentor their junior colleagues in a structured clinical setting. This model is widely recognized for its dual benefits: it enhances the learning outcomes of the students being taught while simultaneously developing the teaching and leadership skills of the student tutors.

At the Faculty of Medicine in Maribor, peer teaching is commonly utilized in clinical skills training, bedside teaching, and small-group case discussions. It has been developed through elective courses in the third year of medical studies. Junior students benefit from a more approachable and supportive learning environment, as they often feel more comfortable asking questions and clarifying uncertainties with their peers than with senior faculty. Additionally, the use of near-peer tutors helps bridge the gap between theoretical knowledge and clinical application, providing practical insights and advice that are directly relevant to examinations and future practice.

For senior students, engaging in peer teaching strengthens their ability to explain complex concepts, improves their communication and teaching skills, and encourages reflection on their own clinical knowledge. It also fosters professional development by preparing them for future roles as educators and mentors within the healthcare system. Moreover, it facilitates the organization and implementation of national and international meetings on medical education.

Overall, clinical peer teaching contributes to a culture of collaboration, mutual support, and active learning. By promoting both knowledge transfer and professional growth, it enriches the academic environment and plays a vital role in shaping competent and reflective future physicians.

Keywords: Bedside Teaching; Clinical Peer Teaching; Skills Training; Student-Tutor

TEACHING LIKE A CHAMELEON: ADAPTING SEMINARS ACROSS DIVERSE LEARNING CULTURES

Davor Kuiš[1,2,3], Jelena Prpić[1,2], Aleksandar Pupovac[1]

[1] University of Rijeka, Faculty of Dental Medicine, Department of Periodontology, Rijeka, Croatia
[2] Clinical Hospital Centre Rijeka, Dental Clinic, Department of Periodontology, Rijeka, Croatia
[3] Josip Juraj Strossmayer University of Osijek, Faculty of Dental Medicine and Health, Department of Dental Medicine, Osijek, Croatia

Corresponding author: davor.kuis@uniri.hr

Aim: Periodontology, as one of the specializations within dental medicine, is an integral part of the curriculum in the Dental medicine and Dental hygiene study programs. The curricula include lectures, seminars, preclinical and clinical exercises. Seminar topics are prepared by students working collaboratively in small groups and presented to their fellow students. The aim of this presentation is to compare the implementation of periodontology seminars across several study programs and to highlight observed differences in approach, preparation, and the level of student engagement.

Materials and Methods: The forms and methods of seminar implementation were analyzed in the following programs: Dental Medicine, University of Rijeka (DM); Dental Hygiene, University of Rijeka (DH); Dental Medicine in English, University of Rijeka (DME); Dental Medicine, University of Maribor, Slovenia (DMM). Data were collected based on student presentations and classroom observations. The way of seminar preparation, type of presentation, and level of student involvement in the learning process were compared.

Results: In the DM program, topics are usually thoroughly researched and presented, with students showing a high level of preparedness. In the DH program, performance is considerably poorer – students mostly read prepared texts, showing limited understanding of the presented material.

In the DME program, presentations are shorter and more concise, focusing on key aspects of the topic, topic and with enhanced esthetic aspect, but with less analytical depth.

An interesting innovation was observed in the DMM program - students introduced interactive methods such as quizzes, video materials and peer surveys. This approach fosters creativity, critical thinking and collaborative learning.

Conclusions: The observed variations in periodontology seminars among study programs may be attributed to several factors: variations in secondary education systems (national frameworks; general secondary school vs. vocational schools), organization of the study programe (full-time vs. part-time) and teaching methods (block or continuous courses; in-person, online, or hybrid formats). The findings indicate the need for standardization of seminar criteria and formats in order to ensure comparable levels of competence and active student participation. Examples of good practice, such as the innovative approaches seen at DMM, could serve as a model for improving education in the field of periodontology.

Keywords: Dental Education; Educational Measurement; Teaching Methods

TRANSFORMATIVE TRENDS IN MEDICAL EDUCATION: INNOVATIONS IN TEACHING CLINICAL OPHTHALMOLOGY

Sonja Jandroković

Clinical Hospital Centre Zagreb, Clinic for Ophthalmology, Zagreb, Croatia

Corresponding author: sonjajandrokovic@gmail.com

Advances in artificial intelligence and digital tools are reshaping medical education and creating new opportunities for innovation in clinical teaching. In ophthalmology, taught in the final year of medical studies, students are encountering digital and AI-supported learning for the first time, having previously been educated through traditional, lecture-based methods. Ophthalmology naturally lends itself to such approaches, as it already relies on diverse digital tools for imaging, diagnostics, and visual analysis, which can be easily connected to interactive and technology-enhanced learning. This presentation will showcase practical applications of ChatGPT for generating case scenarios, VisualDx for differential diagnosis, OCT simulations for image interpretation, and

AI-based quizzes for formative assessment. The aim is to demonstrate how active learning and thoughtful integration of new technologies can enhance understanding, foster clinical reasoning, and prepare future physicians for practice in the digital era.

Keywords: Artificial Intelligence; Case-Based Learning; Digital Technology; Medical Education; Ophthalmology

AI IN MEDICAL EDUCATION: INTELLIGENCE VS WISDOM

Davor Mucic

Treatment Centre Little Prince, Copenhagen, Denmark

Corresponding author: info@denlilleprins.org

The rapid integration of artificial intelligence (AI) into medical education is reshaping how future clinicians acquire knowledge, develop skills, and make decisions. While AI systems excel in processing vast datasets, recognizing complex patterns, and providing immediate, evidence-based suggestions, their "intelligence" remains fundamentally different from human clinical wisdom. This abstract explores the evolving relationship between AI-driven competence and the irreplaceable human qualities essential to medical practice. AI enhances learning through adaptive tutoring, simulation, personalized feedback, and objective assessment, offering students unprecedented access to high-quality training environments. It accelerates mastery of diagnostic reasoning, procedural skills, and data-driven decision-making. However, true clinical wisdom – formed through experience, ethical reflection, empathy, cultural sensitivity, and the ability to navigate uncertainty – cannot be automated. The central tension arises when efficiency and accuracy risk overshadowing judgment, compassion, and professional identity formation. Medical education must therefore shift from merely teaching students to *use* intelligent tools toward cultivating the capacity to critically evaluate them. The physician of the future must be able to integrate AI outputs with nuanced understanding of patient values, contextual factors, and long-term consequences. This presentation argues that the goal is not to choose between intelligence and wisdom, but to design curricula where AI strengthens factual learning while educators reinforce humanistic competence. By embracing AI as a partner – not a replacement – we can train clinicians who are technologically proficient, ethically grounded, and wiser in their care for patients.

Keywords: Artificial Intelligence; Clinical Wisdom; Critical Thinking; Medical Education; Moral; Vision

EFFECTIVE TEACHING AND LEARNING STRATEGIES FOR CLINICAL EXELLENCE IN DENTAL STUDENTS

Jelena Vidas Hrstić

University of Rijeka, Faculty of Dental Medicine, Department of Endodontics and Restorative Dentistry, Rijeka, Croatia

Corresponding author: jelena.vidas@fdmri.uniri.hr

Aim: The aim of the study was to evaluate the change in self-efficacy in endodontics among dental students during their studies.

Materials and Methods: The Endodontic General Self-Efficacy Scale was used. Data for this longitudinal study were obtained from two generations of students who have completed the same three self-efficacy questionnaires at the end of each academic year over a three-year period.

Results: Repeated measurements of each participant revealed a statistically significant difference in self-efficacy level among the three repeated measures over a three-year period ($F(1, 580) = 80.226$; $p < 0.05$). The effect size between groups showed a statistically significant difference in self-efficacy in performing endodontic treatments across all three repeated measures ($F(1) = 13.958$ $p < 0.05$). The post hoc analysis confirmed the between-group difference (2.838; $p < 0.05$) in the arithmetic mean between the group that had predominantly online education and the group that had predominantly in-person education. Active participation and length of time in a dental office (between several days and one year of experience) were associated with an increase in self-efficacy.

Conclusions: Self-efficacy increased as students progressed in their studies. The self-efficacy of students who were not affected by the lockdown tended to increase; however, in the final year of study, the level of self-efficacy was similar for both groups od students. The social persuasion component could explain the alignment in self-efficacy levels. It means that individuals who receive verbal encouragement affirming their abilities to succeed in specific tasks are more likely to exert increased efforts and maintain persistence.

Keywords: Dental Education; Empathy; Self-efficacy; Teaching

WORKSHOP
TRANSFORMING KNOWLEDGE INTO ACTION: HEALTH LITERACY THROUGH COLLABORATIVE LEARNING

Tamara Brussich

Teaching Institute of Public Health of Istria County, Department of Public Health and Health Promotion, Pula – Pola, Croatia

Corresponding author: tamara.brussich@zzjziz.hr

Transformative learning theory does not address general aspects of learning, but rather learning is understood as the process of using previous interpretations of knowledge to construct new insights that will shape and modify existing understanding by complementing it. The transformation of knowledge into action through collaborative learning is based on idea that: collaborative and reflective learning is key to transforming knowledge into real changes in behavior, habits and professional practice, which is extremely important in health literacy. In the context of medical education, this approach offers a strong theoretical and pedagogical, methodological framework for the development of health literacy that goes beyond the traditional transfer of information or giving / receiving instructions. In methodological practice, we recognize three types of experience that can lead to the process of transformational learning, and these are: experience, critical thinking and rational discussion. Contemporary research emphasizes experience, dialogue and reflection as a catalyst for transformation and indicates that transformative learning has effects on health literacy. Health literacy is raised by transformative learning in levels with greater ease and understanding from the first, functional to the second interactive level to the third level, which is the most complete, and that is the critical level. Collaborative learning allows transformation not to take place in isolation, but in the context of dialogue. Such an environment encourages the exchange of experiences and ideas between students, teachers and practitioners of various disciplines. The basic ones are cooperation and key competencies. The role of collaborative learning is to enable a process where health literacy ceases to be a static ability to transmit information and becomes a dynamic cycle that involves understanding, interpretation, application and joint action. This approach in education encourages the creation of health-conscious individuals and communities who understand and use health information for health promotion, disease prevention, and care and collective long-term well-being. The aim of the workshop is to apply collaborative learning methods in medical education and to enhance the ability to recognize the level of health literacy.

Keywords: Collaborative Learning; Cooperative Behavior; Health Education; Health Literacy; Transformative Learning

WORKSHOP
FOSTERING CRITICAL THINKING IN DENTAL EDUCATION THROUGH CASE-BASED COLLABORATIVE LEARNING: A HANDS-ON WORKSHOP

Magda Trinajstić Zrinski[1], Ivana Vidović Zdrilić[2]

[1] University of Rijeka, Faculty of Dental Medicine, Department of Orthodontics, Rijeka, Croatia
[2] University of Rijeka, Faculty of Dental Medicine, Department of Endodontics and Restorative Dentistry, Rijeka, Croatia

Corresponding author: magda.zrinski@fdmri.uniri.hr

The aim of this workshop is to provide participants with practical skills and strategies to foster critical thinking in dental education through case-based collaborative learning (CBCL). Critical thinking enables future practitioners to evaluate evidence, navigate uncertainty, and make safe and informed clinical decisions. Despite its

importance, critical thinking is often insufficiently addressed within traditional, lecture-based curricula, where students mainly acquire knowledge passively. To meet the demands of contemporary dental education, it is essential to introduce interactive methods that encourage students to actively analyze, discuss, and reflect on complex clinical problems. CBCL is a pedagogical approach that integrates realistic case scenarios, small-group collaboration, and structured facilitation. It allows students to identify relevant information, explore multiple diagnostic and therapeutic alternatives, justify their clinical choices, and reflect on their reasoning processes. By shifting the focus from passive listening to active engagement, CBCL stimulates higher-order cognitive skills, enhances communication, and promotes teamwork, all of which are critical for effective and interdisciplinary patient care. During this 60-minute workshop, participants will first be introduced to the principles and evidence supporting CBCL in health professions education. They will then work in small groups on a simulated dental case that requires careful analysis and decision-making. Facilitators will guide the process, highlighting practical strategies to engage students, manage group dynamics, and promote reflective thinking. By the end of the workshop, participants will be able to design case scenarios suitable for collaborative learning, apply facilitation techniques to encourage active student participation, and integrate reflective exercises that strengthen critical thinking skills. The workshop will be especially relevant for educators aiming to enrich their teaching practice with interactive, student-centered methods that align with modern educational standards in dentistry.

Keywords: Critical Thinking; Dental Education; Learning; Teaching

Session C8.
NOVELTIES IN SIMULATION-BASED LEARNING

COMPARING TRADITIONAL AND MODERN ANATOMY TEACHING MODALITIES: EFFICIENCY IN STUDENT KNOWLEDGE

Lidija Kocbek Šaherl, Mateja Rakuša

University of Maribor, Faculty of Medicine, Institute of Anatomy, Hystology, and Embryology, Maribor, Slovenia

Corresponding author: lidija.kocbek-saherl@um.si

Aim: This study aimed to evaluate which learning resources medical students at the University of Maribor use most frequently, how effective they perceive them to be, and how these choices relate to academic performance. The goal was to provide evidence-based guidance for designing anatomy curricula that strategically integrate traditional and modern methods to optimize learning outcomes.

Materials and Methods: This cross-sectional study was carried out across six academic years (2010/2011–2015/2016) and included medical students from the Faculty of Medicine, University of Maribor with a total of 106 participants. Data were collected using a confidential online questionnaire comprising multiple-choice items, Likert scale questions, and optional open-text responses. institutional records were reviewed to systematically document each student's completion of all course requirements.

Results: According to student perceptions, plastic anatomical models had the greatest impact on overall anatomical knowledge, followed closely by donor bodies and dissection. Digital tools, such as the 3D Netter atlas and the Anatomage table, were used less often and perceived as only partially effective. In terms of content retention, students remembered anatomical structures best through practicals involving plastic models and cadaveric specimens, whereas retention was lowest when using digital 3D visualization tools or the Anatomage table. The anatomical atlas emerged as an indispensable reference, widely relied upon by students, highlighting its central role in anatomy education. Nearly 80% of respondents reported that teaching aids alone are insufficient for effective learning, underlining the crucial role of active personal engagement in mastering anatomical concepts.

An analysis of performance on midterm exams, practical assessments, and the final exam reveals generally strong outcomes, with minimal variation in grades across different student cohorts. Almost all students excelled in the practical section of the exam, and the overall outcomes were just as remarkable. Interestingly, some students

did not fulfill their obligations on time but still obtained excellent scores at the final exam. The independence of colloquium and final examination grades is also noteworthy. This suggests that while colloquia serve as checkpoints for reinforcing knowledge, they might not reliably success on comprehensive assessments. Numerous students think that personal motivation is essential for success (more important than merely having effective teaching resources) is far more closely linked to persistence and learning improvements than motivation solely based on external factors (grades, etc.).

Conclusion: The study indicates that, while virtual technologies offer promising educational benefits, cadaveric specimens, plastic models, and anatomical atlases, remain essential for learning, knowledge retention, and the development of practical and professional skills.

Keywords: Anatomy; Examination; Medical Education; Teaching Methods

ROUTINE: BUILDING A STANDARDIZED SIMULATION COURSE FOR EMERGENCIES IN OBSTETRICS AND GYNAECOLOGY

Miha Ambrož[1,2]

[1] University of Maribor, Faculty of Medicine, Institute for Clinical and Translational Research, Maribor, Slovenia
[2] University Medical Centre Maribor, Medical Research Department, Maribor, Slovenia

Correspondning author: miha.ambroz1@um.si

The ROUTINE project (Standardized Simulation Course for Emergencies in Obstetrics and Gynaecology is an international collaboration between the Czech Republic (Masaryk University), Austria (Medical University of Vienna), Germany (Dresden University of Technology) and Slovenia (University Medical Centre Maribor). The project aims to develop, validate and implement a standardized simulation-based training course for managing emergency situations in obstetrics and gynaecology, addressing the gap in available open-access resources of this kind. This initiative responds to the growing need for high-quality simulation education that enhances both technical and non-technical skills, such as communication, teamwork and critical thinking. It is built as an interprofessional course, bringing together doctors (from obstetrics and gynaecology, anesthesiology and neonatology), midwives and nurses. Spanning two days, it combines high-fidelity simulation scenarios with structured debriefings and includes skill stations, with a common goal of improving patient safety and care quality. Through expert consensus and peer review, seven emergency scenarios were developed: Eclampsia, Shoulder Dystocia, Anaphylaxis, Postoperative Dyspnea and Pulmonary Embolism, Postpartum Hemorrhage, Maternal collapse and Acute fetal hypoxia, as well as three skill stations: Difficult airway management, Newborn life support and Breech delivery. With all scenarios, e-learning material was also developed for participants to study before the course. Course effectiveness will be evaluated through a multifaceted approach, with pre- and post-testing. Participants will complete a knowledge test and self-asessment (using the Diagnostic Thinking Inventory (DTI) questionnaire) before the course on day one, and repeat both at the end of the second day, alongside the Simulation Effectiveness Tool – Modified (SET-M). Two simulation sessions will be recorded, one at the start of the first day and one at the end of day two, both being the same scenario but with a different patient. These sessions will be evaluated blindly using an OSCE checklist by trained assessors to ensure objectivity. A pilot course conducted in October in Brno (Czech Republic) will be followed by localized implementations in Vienna, Dresden and Maribor. Based on the results, a validated standardized simulation-based course will be freely disseminated and made available for adaptation elsewhere. The lecture aims to present an approach for creating a standardized simulation-based course while emphasizing the importance of developing open-access material for a broader use.

Keywords: Interprofessional Education; Gynecology; Medical Education; Obstetrics; Program Evaluation; Simulation Training

LEARNING THROUGH EXPERIENCE: THE INFLUENCE OF SIMULATED MASS CASUALTY AND EMERGENCY SITUATIONS ON STUDENT KNOWLEDGE ACQUISITION

Tajda Špes

University of Maribor, Faculty of Medicine, Maribor, Slovenia

Corresponding author: tajda.spes@student.um.si

Simulation-based learning is an essential component of medical education, particularly for preparing students for unpredictable, high-pressure emergencies. This abstract aims to present the educational approach and experiential learning opportunities offered by the Urgentni vikend (Emergency Weekend), highlighting how simulated emergency and mass casualty scenarios support knowledge acquisition, practical skills, organizational understanding, and teamwork development among medical and healthcare students in the program, organized by the Student Emergency Section (Študentska urgentna sekcija) at the Medical Faculty, University of Maribor. The project presents an innovative model integrating theoretical learning with experiential, simulation-based training through lectures, workshops, and progressively complex exercises that enhance both knowledge and practical response skills. Participants first engage in smaller, scenario-based clinical simulations that connect theoretical knowledge with field management. Working in rotating teams, students address diverse emergency situations and perform procedures ranging from basic immobilization to advanced resuscitation. These controlled environments foster teamwork, effective communication, and calm decision-making under pressure, providing essential preparation for the large-scale simulations that follow. The educational progression culminates in two comprehensive mass casualty simulations replicating the complexity of real disasters. The first occurs without prior notice, exposing students to chaos, limited information, and the emotional intensity characteristic of real emergencies. Teams must quickly organize, establish triage zones, and allocate limited resources efficiently. This phase tests adaptability, leadership, and spontaneous coordination. The second, preplanned simulation allows structured preparation, during which students familiarize themselves with command hierarchies, define roles, and coordinate patient transport in collaboration with police, firefighters, and military personnel. Observations from mentors and MRMI instructors demonstrated clear improvement between the two simulations, with notable progress in leadership, communication, triage management, logistics, and situational awareness. Urgentni vikend illustrates how immersive simulation bridges theory and practice, transforming students from observers into competent responders. By experiencing both unannounced and preplanned mass casualty scenarios, participants gain not only clinical and organizational competence but also adaptability, teamwork, and leadership, which are vital for effective performance in real-world emergency environments.

Keywords: Emergency Medicine; Experiential Learning; Mass Casualty Incidents; Medical Students; Simulation Training

FROM SIMULATOR TO REALITY – DEVELOPING LIFE SKILLS IN EMERGENCY MEDICINE

Andreja Maček

Institute of Emergency Medicine of Primorsko-Goranska County, Out of Hospital, Rijeka, Croatia

Corresponding author: andrejam24@gmail.com

In emergency medicine, every decision can make the difference between life and death. It sounds like a cliché – until it's not. We are aware of the risks of our profession, yet sometimes unaware of the gaps in our knowledge and its application. Technical proficiency alone is not enough. True professional success and patient safety depend on a wide range of "skills for life" – communication, teamwork, emotional resilience, and the ability to make sound decisions under pressure. Simulation-based training, when properly designed, provides an ideal environment to develop these essential competencies. The aim of this presentation is to highlight how simulation-based education can be transformed into real-world safe practice by developing not only clinical but also interpersonal and emotional competencies essential for emergency medical professionals. Through realistic scenarios, healthcare professionals not only practice clinical procedures but also refine interpersonal communication, recognize stress responses, strengthen leadership, and learn through reflection and feedback. However, the real challenge begins once training moves from the simulator to real-life settings, where unpredictability, fatigue,

and emotional load test both knowledge and character. Despite the proven educational value of simulation, gaps remain in translating acquired competencies into everyday practice. Insufficient mentoring, lack of systematic follow-up, and limited institutional support often weaken the long-term impact of training. To transform education into safe and sustainable practice, an integrated model is required – one that connects simulation, mentorship, reflection, and application. This approach fosters professional identity, reduces the risk of burnout and error, and cultivates competencies that extend far beyond the clinical field – true skills for life. Simulation, therefore, should not be viewed merely as a learning tool, but as a transformative process shaping confident, self-aware, and resilient healthcare professionals – ready for the realities of modern emergency medicine.

Keywords: Clinical Competence; Emergency Medical Services; Leadership; Patient Safety; Simulation Training

EXTRACURRICULAR SIMULATION-BASED LEARNING IN CLINICAL PEER TEACHING

Tadej Petreski[1,2]

[1] University of Maribor, Faculty of Medicine, Maribor, Slovenia
[2] University Medical Centre Maribor, Department of Nephrology, Maribor, Slovenia

Corresponding author: tadej.petreski1@guest.um.si

Clinicians recognise that medical students require time to acquire skills and practise them safely before they encounter real patients, yet ward pressure and limited faculty time make this challenging. Extracurricular simulation – after-hours, voluntary sessions run by senior students for juniors with faculty oversight – offers a practical solution. This review summarises what works and proposes a simple model that a medical school or clinic can adopt with modest resources. The review aims to describe the educational value, basic organisation, and quality safeguards of student-led simulation within clinical peer teaching, and to suggest clear measures of impact. Typical sessions focus on common internal-medicine tasks (venepuncture, arterial sampling, catheterisation, ECG placement, and bedside ultrasound basics), acute scenarios (deteriorating patient, sepsis bundle, and chest pain), and core behaviours (handover, escalation of concern, and teamwork). Published reports consistently demonstrate better completion of procedural steps and improved OSCE performance, accompanied by higher confidence and earlier help-seeking. Effects on real-world patient outcomes still require stronger evidence. The review outlines a five-part plan for implementaion: (1) Access and equity – open lab hours, simple booking, and a small library of trainers; (2) Curriculum – clear skills aligned to Entrustable Professional Activities and ward needs; (3) Tutor development – brief train-the-trainer workshops, standard teaching scripts, and periodic calibration; (4) Assessment – short pre/post checks, linkage to workplace-based assessments, and basic learning analytics; (5) Governance – named consultant oversight, risk management, and concise documentation. Practical tips include using affordable models, scheduling sessions during low-demand periods, offering micro-credentials for tutors, and incorporating short debriefs with a clinician. Common pitfalls are tutor "drift," variable standards, sustainability, and inclusion; these can be contained with checklists, small group sizes, regular calibration, and formal recognition for tutors. In summary, structured extracurricular simulation can extend limited faculty capacity, safely accelerate skill acquisition, and prepare students for the wards more effectively.

Keywords: Clinical Competence; Medical Students; Patient Safety; Peer Teaching; Simulation Training; Undergraduate Medical Education

WORKSHOP
PAME – ULTRASOUND AS A BRIDGE BETWEEN ANATOMY AND CLINICAL PRACTICE

Vito Novak, Jan Šporin

University of Maribor, Faculty of Medicine, Maribor, Slovenia

Corresponding author: vito.novak@student.um.si

PAME (POCUS assisted medical education) is an interactive workshop, aimed at improving undergraduate medical education by using point-of-care ultrasound (POCUS) as a teaching tool for anatomy, physiology, and clinical reasoning. The project started in 2016 with the handbook PACE (POCUS Assisted Clinical Examination)

and its first workshop at the 12th WINFOCUS world congress on ultrasound in emergency and critical care in Ljubljana, Slovenia. From this foundation, PAME was designed as a three-level model: 1. Fundamentals (1st–2nd year: anatomy and physiology with ultrasound), 2. Clinical Examination (3rd–4th year: propedeutics and differential diagnosis), 3. Clinical Integration (5th–6th year: patient management, especially in emergency medicine). Workshops are highly interactive: in PAME Anatomy – Abdomen, students explore the anterior abdominal wall, diaphragm, liver, gallbladder, kidneys, spleen, aorta, urinary bladder and pelvic spaces, linking classical anatomy with ultrasound findings. In PAME Anatomy – Heart, students learn cardiac chambers, valves, coronary vessels, pericardium, conduction system, and the dynamics of contraction, relating anatomical structures to ultrasound windows and functional assessment. The sessions are organized in collaboration with Ultrafest Maribor, a student-led project of the Medical Students' Association of Maribor, which promotes ultrasound literacy through annual educational events. PAME has been successfully integrated into the official curriculum at the University of Maribor. Ultrasound is now included in core courses (Anatomy with Histology and Embryology; Physiology) and elective courses (Propedeutics, Endoscopic and Ultrasound Simulations). Students report improved understanding of anatomy and physiology, greater engagement, and a better link between theoretical knowledge and clinical reasoning. PAME demonstrates that ultrasound is not only a diagnostic tool but also an effective educational instrument. By combining practical ultrasound anatomy with clinical integration, it bridges basic sciences and clinical medicine, providing an innovative model of modern medical education.

Keywords: Anatomy; Curriculum; Education, Medical; Point-of-Care Systems; Ultrasound

WORKSHOP
DESIGNING HIGH-IMPACT SIMULATION SCENARIOS FOR CLINICAL TEACHING

Ivan Ševeljević[1,2], Ivan Vuksan[1,2], Matej Bura[1,2], Erika Šuper-Petrinjac[1,2], Janja Tarčuković[1,2]

[1] University of Rijeka, Medical Faculty, Department of Anaesthesiology, Resuscitation, Emergency and Intensive Care Medicine, Rijeka, Croatia
[2] Clinical Hospital Centre Rijeka, Department of Anaesthesiology, Intensive Care and Pain Medicine, Rijeka, Croatia

Corresponding author: matej.bura@hotmail.com

Simulation-based education is now an essential method in clinical teaching, yet scenario design, as one of the foundations, is often underestimated or approached with limited structure. This workshop targets educators who already include simulation in their teaching and want to enhance their ability to create useful, goal-oriented and engaging clinical scenarios. The aim of the session is to introduce participants to core theoretical principles that underpin the development of high-quality simulation cases, regardless of the modality or technological complexity used. An effective simulation scenario begins with the identification of specific, measurable learning objectives. These objectives should reflect the learners' level of training, expected competencies, and the intended focus of the session regardless if it is clinical reasoning, procedural skills, teamwork, or communication. Once objectives are defined, the scenario framework can be developed to support them. A well-designed case balances realism and educational focus: the clinical narrative should be believable and aligned with real-life situations, yet streamlined to avoid unnecessary complexity or distraction. Matching scenario difficulty and fidelity to the learner cohort is essential for maintaining engagement and supporting skill development without introducing excessive cognitive load. Designing appropriate decision points and potential learner actions requires a clear understanding of common decisions-making steps in clinical reasoning and opportunities for discussion or correction. It is equally important to ensure psychological safety within the scenario structure, allowing learners to feel comfortable making decisions, asking questions, and reflecting on their performance. Finally, good scenarios are structured but flexible. They allow for variation in learner response while keeping the session anchored to its key goals. By focusing on learning rather than performance, simulation scenarios become powerful tools for bridging knowledge, skills, and behavior in medical education.

Keywords: Clinical Teaching; Medical Education; Scenario Design; Simulation-Based Education

Session C10.
FLIPPED CLASSROOM AS A NEW TEACHING STANDARD IN MEDICAL EDUCATION

"FLIPPING" THE ELECTIVE COURSES: INNOVATIVE CURRICULUM APPROACH WHEN TIME IS LIMITED

Sanja Dević Pavlić

University of Rijeka, Faculty of Medicine, Department of Medical Biology and Genetics, Rijeka, Croatia

Corresponding author: sanja.devic@uniri.hr

The aim of this presentation is to examine the implementation of the flipped classroom model in elective courses, with particular attention to curriculum design when contact time is limited. Although most often applied in clinical education, the flipped classroom also holds considerable promise in elective biomedical courses by enhancing learning efficiency, motivation, and long-term knowledge retention. The elective course Epigenetics in Health and Disease, delivered within the University integrated undergraduate and graduate study Medicine at the University of Rijeka, was organized entirely according to flipped classroom principles. Students studied interactive online materials in advance, while on site sessions focused on active learning through journal club seminars, discussion, and problem-solving. This approach replaced traditional lectures with student-centred activities that fostered deeper understanding and critical engagement with complex content. Key benefits included greater autonomy, active participation, and more effective integration of theory into biomedical contexts, even under time constraints. Challenges such as time management and the abstractness of concepts highlighted the importance of careful instructional design and high-quality preparatory materials. Overall, this experience illustrates that flipping elective courses is both feasible and effective, offering a valuable innovation for modernizing medical curricula and better preparing students for advanced study and clinical practice.

Keywords: Epigenetics; Medical Education; Problem-Based Learning; Teaching

INNOVATIVE TEACHING IN MEDICINE: WHEN ARTIFICIAL INTELLIGENCE MEETS THE FLIPPED CLASSROOM

Mirza Žižak

University of Zagreb School of Medicine, Office for E-learning, Zagreb, Croatia

Corresponding author: mirza.zizak@mef.hr

The flipped classroom (FC) is one of the most innovative pedagogical models in higher education, especially in medicine where students face demanding workloads and outcomes requiring both deep understanding and practical application. In contrast to the traditional lecture-based model, the FC approach shifts the acquisition of new knowledge to the asynchronous phase, outside the classroom, through video lectures, podcasts, quizzes, and problem-based assignments. Classroom time is then reserved for active learning, collaboration, problem-solving, and applying theoretical concepts to clinical cases. Numerous studies, including feedback from medical students themselves, indicate that FC is more effective than traditional approaches in preparing for final examinations, as it fosters better comprehension, self-directed learning, and long-term retention. Still, many teachers resist this approach. FC requires a radical shift in mindset, as the teacher's role evolves into facilitator and mentor. Some feel uncomfortable in this position, and many lack training in learning design and flipped strategies. Implementation demands substantial time: setting clear learning outcomes, preparing quizzes, podcasts, videos, and problem-based tasks. For already overburdened faculty, these additional duties create stress. Producing quality materials also requires technical skills and equipment that are not always available. The model further relies on student responsibility. If students do not prepare at home by engaging with the materials, classroom activities lose effectiveness. Some students initially resist collaborative work, finding the approach demanding. Thus, barriers include heavy initial workload, lack of support and training, technical challenges, and concerns

about student preparedness. Artificial intelligence (AI) can address many of these obstacles. Acting as a teaching assistant, AI reduces preparation time by supporting the creation of precise learning outcomes, generating quizzes, drafting podcast and video scripts, and proposing problem-based assignments. By lowering the administrative burden, AI improves teacher well-being and making them more open to pedagogical innovation. AI tools can also suggest ideas for in-class activities, supporting teachers in adapting to the facilitator role while simultaneously enriching interaction. When combined, FC and AI create a powerful synergy: FC maximizes active learning and knowledge application, while AI minimizes barriers to its implementation. Together, they form a pathway towards more engaging, efficient and sustainable medical education, aligned with the expectations of modern students and the future of healthcare.

Keywords: Active Learning; Artificial Intelligence; Flipped Classroom; Medical Education; Self-Directed Learning

WORKSHOP
FLIPPED CLASSROOM: FROM IDEA TO IMPLEMENTATION WITH THE SUPPORT OF AN ARTIFICIAL INTELLIGENCE ASSISTANT

Mirza Žižak

University of Zagreb School of Medicine, Office for E-learning, Zagreb, Croatia

Corresponding author: mirza.zizak@mef.hr

The flipped classroom (FC) approach is one of the most innovative pedagogical models in higher education, reshaping the classical model of teaching and learning. Unlike classical approaches that rely primarily on the passive transfer of knowledge, the FC approach emphasizes active knowledge construction. At its core, the FC approach organizes the learning process into two complementary phases: the asynchronous phase, where students acquire fundamental concepts before class through digital resources such as video lectures, podcasts, or quizzes; and the synchronous phase, where class time is dedicated to active learning, collaboration, discussion and problem-solving. This interactive workshop is designed to guide participants through the essentials of the FC model, demonstrating how different teaching and learning activities (TLA) can be effectively distributed between two phases of the FC approach. Its success depends on carefully selecting and designing TLA that align with learning outcomes (LO) and foster students to arrive to class well-prepared and ready to engage. To support this process, participants will be introduced to the Balanced Design Planning (BDP) tool. BDP provides a practical framework for aligning TLA with LO while also estimating student workload, thus enabling a balanced and purposeful course design. However, despite the proven effectiveness of the FC approach, many teachers remain hesitant to adopt it. One of the main barriers lies in the time and effort required to produce high-quality materials, which can discourage even those who recognize its pedagogical value. This workshop addresses these challenges by offering practical solutions. The central part of the workshop will focus on demonstrating how the artificial intelligence (AI), can enhance and streamline both preparation and active learning. Through practical demonstrations using an AI assistant, participants will learn how AI can be applied to generate LO, design self-assessment quizzes, produce scripts for video lectures and podcasts and develop clinical case scenarios. By integrating AI into their practice, teachers can significantly reduce preparation time while improving the quality, interactivity, and creativity of their teaching materials. Conducted in an interactive format, the workshop will provide participants with the opportunity to apply both the FC framework and AI-supported tools directly to their own subjects. Those wishing to engage actively in the practical component are encouraged to bring a laptop and a PDF document (such as a textbook chapter relevant to the topic they teach). This will enable them to experiment with both the BDP framework and AI-supported tools directly on their own teaching materials, bridging the gap between theory and practice - and moving from idea to implementation.

Keywords: Artificial Intelligence; Flipped Classroom; Learning Design; Medical Education; Teaching and Learning Activities

Session C11.
KEYNOTE TRANSFORMATIVE SESSION - IS THERE A FUTURE FOR MEDICAL TEACHERS? ARTIFICIAL VS. HUMAN INTELLIGENCE

AI AND THE MEDICINE AT THE END OF THE WORLD

Juraj Bilić[1,2]

[1] Assistant Director, Croatian Academic and Research Network (CARNET), Croatia
[2] OECD Expert on the Future of AI

Corresponding author: juraj.bilic@carnet.hr

This analysis posits that the development of Artificial Intelligence over the 2025–2035 decade represents not an eschatological event, but a possibility of a profound structural transformation of work, knowledge, and power. The outcomes of this transformation are not predetermined; they are contingent upon three decisive factors: 1) the control and distribution of computational resources (compute), 2) the nature of governance and regulation, and 3) the mechanisms for benefit-sharing. We articulate four primary scenarios for this near-future: Techno-Feudalism (rapid, centralized, opaque), the Leviathan State (centralized, cautious, bureaucratic), Distributed Chaos (proliferated, unsafe, uncoordinated), and the Federation of Models (distributed, responsible, interoperable). The implications of these trajectories are particularly acute in high-impact sectors such as medicine. It explores how dystopian pathways – Techno-Feudalism or Distributed Chaos – could leverage AI for coercive ends. In these scenarios, powerful AI-driven tools like gene resequencing or advanced neural chip implants risk becoming instruments of profound inequality. They could create a new 'bio-tech divide' based on privileged access, or, if unregulated, lead to catastrophic 'bio-hacking' incidents and the exploitation of the most sensitive personal data. To counteract these risks, the paper argues that the "Human-in-the-Loop" (HIL) principle must be codified as a permanent, non-negotiable component for accountability in all critical sectors, especially in clinical decision-making. We conclude that avoiding technological dependency and ensuring equitable, human-centric outcomes requires immediate, concrete policy levers and significant investment in both hardware as well as in (open-source) gen AI. These must include robust public investment in 'compute commons' to democratize access, mandated interoperability standards to prevent vendor lock-in, and directing education towards critical thinking and verification, (AI) ethics in addition to knowledge adoption.

Keywords: Bio-Tech Divide; Computational Resources; Education; Open-Source AI

THE USE OF ADVANCED CONVERSATIONAL AGENTS BASED ON ARTIFICIAL INTELLIGENCE TECHNOLOGIES – TECHNOLOGICAL, ETHICAL, AND LEGAL IMPLICATIONS

Damir Medved

University of Rijeka, EDIH ADRIA director, Rijeka, Croatia

Corresponding author: damir.medved@uniri.hr

The rapid advancement of artificial intelligence technologies in conversational AI agents and assistants presents significant opportunities for broader application across public institutions, the economy, and education. However, experience from the EDIH ADRIA project, along with numerous recent research findings, reveals substantial challenges that warrant careful consideration. A critical question emerges: where is the boundary between general information that an AI agent can appropriately provide and domains that require professional expertise? Consider the difference in consequences: selecting the wrong option when configuring a new car may result only in financial loss, but providing incorrect medical advice or recommending an inappropriate remedy can have serious health consequences. This raises fundamental questions about our readiness – particularly from legal and ethical perspectives – for a world that will undergo radical transformation in the coming years. As these

technologies continue to evolve at an unprecedented pace, we must address these challenges proactively to ensure responsible implementation.

Keywords: Artificial Intelligence; Conversational AI Agents; Ethics; Legal Implications

FUTURE OF EDUCATION: A SYMBIOTIC RELATIONSHIP BETWEEN MACHINES AND HUMAN INTELLIGENCE

Hrvoje Brkić[1,2]

[1] University Josip Juraj Strossmayer Osijek, Faculty of medicine, Department of Biophysics and Medical Physics, Osijek, Croatia
[2] University Josip Juraj Strossmayer Osijek, Faculty of Dental Medicine and Health Osijek, Department of Biophysics, Biology and Chemistry, Osijek, Croatia

Corresponding author: hbrkic@mefos.hr

Aim of this lecture is to emphasize the symbiosis between machine learning tools and human interaction. Is the future of education the replacement of human teachers by Machine Learning (ML) algorithms? The learning process is transforming over time, but the change is a natural process specific to human development. If the personalization is the aim of the learning process, ML algorithms can be used to analyze students performance data and develop customized learning plans. These plans can be dynamically adapted to each student individual needs by recommending targeted resources, adjusting difficulty levels, and suggesting formative assessments, thereby enabling more effective, continuous improvement. Students struggling with a complex topic can get access to additional resources and interactive exercises, while more advanced students can be challenged with more complex tasks. In this approach, *ex chathedra* lectures are minimized and teachers role is shifts toward mentoring, coaching and curating. As ML will probably take over routine tasks like grading tests and tracking students progress, teachers can focus on uniquely human skills such as critical thinking, creativity, emotional intelligence and collaboration. This fusion of technology and teaching helps overcome geographical barriers and offering high-quality medical education to people worldwide. ML tools can provide immediate feedback on technical skills, such as interpreting lab results or identifying anatomical structures. However, technology alone cannot replace the skills needed for patient interaction, which are essential in medical professions. The "more than 90% nonverbal communication" concept, while often oversimplified, highlights the critical importance of a physician's ability to read and respond to a patient's nonverbal cues, which sometimes requires direct, human-to-human interaction. Finally, it is necessary to address ethical questions, such as data protection, especially patient data protection and privacy. Maintaining a balance between digital learning and the personal contact that is crucial for students social and emotional development. The goal is to use ML to enhance the learning process, not to automate the human-centered aspects of medicine.

Keywords: Education Machine Learning; Medicine Students; Teachers

ARTIFICIAL INTELLIGENCE IN MEDICINE AND EDUCATION: ACHIEVEMENTS, OPPORTUNITIES, CHALLENGES, AND THE ROAD AHEAD

Dejan Dinevski

Universtiy of Maribor, Faculty of Medicine, Maribor, Slovenia

Corresponding author: dejan.dinevski@um.si

Artificial intelligence (AI) has rapidly evolved from a niche technological field into one of the most transformative forces across science, healthcare, and education. From early rule-based expert systems to today's large-scale neural networks, AI has consistently expanded its scope, accuracy, and usability. In recent years, the emergence of generative AI has marked a paradigm shift: these systems are multimodal, capable of processing and generating text, images, speech, and even molecular structures. Their flexibility makes them powerful tools not only for clinical applications but also for reshaping the way we teach and learn. A central element of this transformation is the rise of large language models (LLMs). LLMs can synthesize information from vast corpora, engage in human-like dialogue, and adapt to diverse tasks with minimal prompting. In education, they support adaptive learning

environments, intelligent tutoring, and the automation of assessment and feedback. In medicine, LLMs contribute to literature synthesis, decision support, patient communication, and the streamlining of clinical documentation. Beyond these direct uses, AI increasingly accelerates research and discovery, from analyzing genomic data to simulating complex biological processes. Perhaps the most profound promise of AI lies in its role in personalized and precision medicine. By integrating multimodal patient data – genetic, imaging, behavioral, and environmental – AI enables more precise diagnostics, risk prediction, and tailored therapeutic strategies. This has the potential to fundamentally redefine the relationship between patients, clinicians, and medical knowledge. However, such progress also raises significant challenges. The opacity of deep learning models highlights the urgent need for explainable AI, especially in high-stakes domains like healthcare. Ethical issues are equally pressing: bias in training data, inequities in access, data privacy, and accountability for errors. These risks underscore the importance of critical oversight, interdisciplinary collaboration, and robust regulatory frameworks. Looking toward the road ahead, consensus is emerging around both the opportunities and the uncertainties of AI's trajectory. The prospect of artificial general intelligence (AGI) and, eventually, artificial superintelligence (ASI) invites deep reflection on their implications for medicine and education. While AGI could accelerate scientific discovery and universalize access to knowledge, it also challenges our ethical, legal, and societal frameworks at a fundamental level. For educators and healthcare professionals alike, this future requires not only technological preparedness but also a renewed commitment to human values, empathy, and responsibility.

Keywords: Artificial Intelligence; Teaching; Medical Informatics

EMPOWERING STUDENT LEARNING IN CLINICAL SETTINGS THROUGH ARTIFICIAL INTELLIGENCE

Faris Mujezinović[1,2]

[1] University Medical Centre Maribor, Department of Perinatology, Maribor, Slovenia
[2] University of Maribor, Faculty of Medicine, Maribor, Slovenia

Corresponding author: faris.mujezinovic@ukc-mb.si

Aim of this presentation is to explore how artificial intelligence can enhance student learning in clinical settings by providing personalized support, real-time feedback, and innovative educational tools. The rapid integration of artificial intelligence (AI) into healthcare is transforming not only clinical practice but also the way future healthcare professionals learn and develop their competencies. This lecture explores how AI-driven tools can enhance medical education within clinical environments by providing personalized learning experiences, real-time decision support, and data-driven feedback. Through practical examples and case studies, we will demonstrate how AI applications – from virtual patients and intelligent tutoring systems to diagnostic support platforms – can augment traditional bedside teaching and bridge the gap between theory and practice. The session also addresses key challenges such as ethical considerations, data privacy, and the need for critical thinking skills in an AI-enhanced curriculum. Ultimately, participants will gain insights into how AI can empower students to become more engaged, reflective, and adaptive clinicians in a rapidly evolving healthcare landscape.

Keywords: Artificial Intelligence; Clinical Learning; Medical Education; Personalized Feedback

ARTIFICIAL INTELLIGENCE IN GASTROENTEROLOGY: CURRENT LANDSCAPE AND FUTURE FRONTIERS

Katja Grubelic Ravic

University Hospital Center Zagreb, Department of Gastroenterology and Hepatology, Zagreb, Croatia

Corresponding author: katjagrubelic@gmail.com

Artificial intelligence (AI) is redefining gastroenterology, with the most profound impact seen in endoscopy. Deep learning–based systems now enable real-time polyp detection, lesion characterization**,** and automated quality assessment**,** markedly improving adenoma detection rates and diagnostic consistency. Beyond endoscopy, AI supports

histopathology, radiology, and predictive modeling for complex liver and bowel diseases. Integration of multimodal data is advancing precision gastroenterology, while challenges in data standardization, interpretability, and regulation persist. The future points toward AI-augmented therapeutic endoscopy and predictive digital twins**,** positioning AI as an indispensable collaborator in delivering safer, more precise, and data-driven gastrointestinal care.

Keywords: AI; Endoscopy; Gastroenterology

WORKSHOP
LARGE LANGUAGE MODELS IN ACADEMIC WORK AND MEDICAL EDUCATION

Ivana Mihalek

University of Rijeka, Faculty of Medicine, Department of Molecular Medicine and Biotechnology, Rijeka, Croatia

Corresponding author: ivana.mihalek@uniri.hr

Large Language Models (LLMs) – the core technology behind AI-powered chatbots such as ChatGPT, Claude, and Gemini – are rapidly reshaping how medical researchers and educators search for, interpret, and communicate scientific information. The aim of this workshop is to introduce beginners to the practical, responsible, and hands-on use of freely available LLM platforms in medical research and teaching. Participants are encouraged to bring their own laptops, tablets, or phones and, if they wish, to create accounts on one or more chat-based LLM platforms before the session; this is not mandatory but will allow full participation in live exercises. Designed for those with no prior experience, the 60-minute workshop emphasizes demonstration, exploration, and critical discussion. The session begins with a brief introduction to the principles of data privacy and confidentiality in the use of online AI tools – an essential prerequisite for safe application in medical and academic contexts. Building on this foundation, participants will then explore (1) how LLMs can assist with literature searching by helping to formulate structured queries; (2) how LLMs can summarize and critically review scientific papers; (3) how LLMs can streamline planning and administrative tasks in medical education; and (4) how LLMs can be used from a learner's perspective as Socratic learning partners. Each segment includes live demonstrations using free LLM chat engines, with opportunities for participants to follow along and experiment in real time. The workshop underscores both the benefits and limitations of LLMs, emphasizing data privacy, bias awareness, and critical engagement. By its end, participants will have gained practical confidence in integrating LLMs into their academic work while maintaining ethical and professional standards.

Keywords: Artificial Intelligence; Medical Education; Natural Language Processing; Research; Review Literature as Topic; Teaching

WORKSHOP
GENERATIVE AI TOOLS IN MEDICAL EDUCATION

Maja Gligora Marković

University of Rijeka, Faculty of Medicine, Department of Biomedicine Informatics, Rijeka, Croatia

Corresponding author: majagm@medri.uniri.hr

Workshop participants will be introduced to the basic concepts of generative artificial intelligence tools and their application in medical education. The focus will be on specific tools that use generative artificial intelligence for content creation, clinical scenario simulation, and personalised learning. The workshop will examine how AI tools can support the development of clinical thinking and communication skills. Practical examples will be presented, and ethical challenges – including information accuracy, data privacy, and academic integrity – will be discussed. Participants will have the opportunity to engage actively with the tools through practical tasks. Special emphasis will be placed on the role of teachers in shaping the responsible and effective use of artificial intelligence technology. The workshop is intended for teachers, educators, and experts in medical education. The goal is to empower participants to use GenAI tools to improve the quality and accessibility of education.

Keywords: AI tools; Generative Artificial Intelligence; Medical Education; Teaching

Session C12.
KEYNOTE TRANSFORMATIVE SESSION – FACULTY DEVELOPMENT AS A MAJOR TRANSFORMATIVE POWER

THE IMPORTANCE OF TEACHER EDUCATION: EMPOWERING INDIVIDUAL GROWTH TO DRIVE INSTITUTIONAL EXCELLENCE

Nina Pereza[1,2]

[1] University of Rijeka, Faculty of Medicine, Centre for Improving Teacher Competencies and Communication Skills, Rijeka, Croatia
[2] University of Rijeka, Faculty of Medicine, Department of Medical Biology and Genetics, Rijeka, Croatia

Corresponding author: nina.pereza@uniri.hr

Faculty development (FD) is central to advancing medical education, as empowering educators strengthens individual competence in the short term and drives institutional performance and transformation in the long term. This presentation traces the evolution of the Centre for Improving Teacher Competencies and Communication Skills (Centre for Medical Education, CME) at the Faculty of Medicine in Rijeka, highlighting how investing in teacher professional development promotes broader institutional excellence. Since its establishment in 2017, the CME – serving as a central educational FD unit – has implemented a wide range of initiatives, including educational programmes, scientific and professional meetings, research projects, publishing activities, and peer review in teaching. These efforts have enhanced educators' pedagogical skills, confidence, and professional identity, fostering a culture of reflective, learner-centred teaching. Over time, the impact has extended beyond individual teachers, contributing to course reforms, improved student engagement, more effective assessment practices, and the development of educational projects through personalised collaborations between the CME and individual departments. Key enablers of success include leadership support, dedicated resources, and collaborative communities of practice. The CME's experience demonstrates that even smaller faculties can achieve significant institutional impact through focused, centralised, and strategic FD. By positioning teacher education as an institutional priority, individual growth becomes a catalyst for system-wide improvements in educational quality, academic culture, and performance. Lessons learned underscore the importance of aligning FD initiatives with institutional strategy, recognising and rewarding educational roles, and building sustainable structures for continuous improvement. This narrative provides practical insights for medical faculties seeking to leverage teacher education as a key driver of institutional excellence.

Keywords: Faculty Development; Healthcare Professions; Medical Education; Medical Teacher; Professional Development

THE POWER OF PEER REVIEW IN TEACHING: SHAPING THE FUTURE OF PERSONALIZED TEACHER TRAINING

Jasenka Mršić-Pelčić[1,2], Nina Pereza[2,3]

[1] University of Rijeka, Faculty of Medicine, Department of Basic and Clinical Pharmacology and Toxicology, Rijeka, Croatia
[2] University of Rijeka, Faculty of Medicine, Centre for Improving Teacher Competencies and Communication Skills, Rijeka, Croatia
[3] University of Rijeka, Faculty of Medicine, Department of Medical Biology and Genetics, Rijeka, Croatia

Corresponding author: jasenka.mrsic.pelcic@uniri.hr

This presentation aims to explore how the power of peer review can be utilized to transform teacher training in medical education through personalized, reflective, and collaborative approaches. The rapidly evolving field of medical education demands innovative and adaptive professional development that meets the diverse needs of educators and students. Traditionally linked to research, peer review is presented here as a powerful mechanism for enhancing teaching practices. It fosters continuous reflection, personalized development, and collective growth among educators. Since medical teaching requires constant adaptation and self-reflection, peer review offers a structured framework for constructive feedback, refinement of teaching techniques, and professional

growth. Beyond evaluation, it builds mutual support, encourages dialogue, and empowers educators to take a more responsible approach to their learning. Through peer-driven feedback, strengths and areas for improvement are identified, leading to more effective and tailored teaching strategies. Its benefits – enhanced reflective practice, innovation in teaching, and collaboration – will be discussed, alongside challenges such as bias, time constraints, and the need for reviewer training. Practical strategies to overcome these barriers will be proposed. A key focus is on how peer review personalizes teacher training. Unlike traditional "one-size-fits-all" approaches, peer review offers individualized feedback tailored to each educator's style and goals. This promotes customized learning pathways and sustainable professional growth. The examples of successful integration of peer review in medical education, showing improvements in teaching effectiveness, leadership, and accountability, will be presented. The discussion will also highlight how peer review aligns institutional priorities with personal aspirations, enhancing learning outcomes and student satisfaction. Finally, strategies for implementing peer review frameworks will be outlined, including digital tools, reviewer preparation, and fostering a culture of open communication. Embedding peer review as a core element of faculty development can cultivate a dynamic community of continuous improvement. In conclusion, integrating peer-driven feedback into professional development promotes a culture of excellence, collaboration, and innovation – ultimately enhancing the quality of education for both teachers and students.

Keywords: Educational Innovation; Medical Education; Peer Review; Personalized Development; Professional Growth; Teacher Training

MENTAL REHERSAL IN SURGICAL EDUCATION: ENHANCING LAPAROSCOPIC TRAINING THROUGH VISUALISATION

Rok Šumak[1,2], Maja Leban[2], Nika Pongračić[2], Martin Grabljevec[2], Lina Šnajder[3], Tamara Meško Hlastec[4], Tamara Serdinšek[1,2]

[1] University Medical Centre Maribor, Department of Gynaecology and Perinatology, Maribor, Slovenia
[2] University of Maribor, Faculty of Medicine, Maribor, Slovenia
[3] University of Ljubljana, Faculty of Medicine, Ljubljana, Slovenia
[4] University Medical Centre Ljubljana, University Children's hospital, Ljubljana, Slovenia

Corresponding author: roksumak@gmail.com

Aim: Visualisation is a cognitive technique that involves mentally rehearsing a task or skill, without physical movement. This study aimed to evaluate the effectiveness of visualisation as a training tool in laparoscopic simulator exercise and compare it to traditional repeated physical practice.

Materials and methods: Fifty medical students with no laparoscopic experience, were randomly assigned into two groups. Group 1, "laparoscopic group" (n=25) performed a validated hand-eye coordination laparoscopic exercise using GESEA LASTT model seven times in succession, each lasting two minutes, aiming to place up to 12 colored rings to metal nails. Group 2, "visualization group" (n=25) performed the exercise physically on attempts 1, 4, and 7, while attempts 2, 3, 5, and 6 were completed using visualisation only. Each attempt was limited to 2 minutes. Scoring was performed based on the number of placed rings (range 0-12 points). Performance of both groups was compared. Statistical analysis was performed using SPSS software (version 25). Friedman test and Mann-Whitney test were used to compare data within and between groups. A p-value of < 0.05 was considered statistically significant.

Results: Mean scores in the laparoscopic group increased from 2.92±2.14 (1st attempt) to 6.52±3.26 (4th attempt) and 8.24±2.86 (7th attempt). In the visualisation group, scores rose from 2.88±1.72 (1st attempt) to 5.76±2.57 (4th attempt) and 7.44±2.99 (7th attempt). Within-group analysis revealed a statistically significant improvement in performance across the 1st, 4th, and 7th attempts for both the laparoscopic ($p < 0.01$) and the visualisation group ($p < 0.01$), indicating effective skill acquisition in both training approaches. The visualisation group demonstrated performance outcomes comparable to the repeated physical practice group, with no significant difference in the number of pins placed on the 4th and final (7th) attempts ($p = 0.39$). Compared to only the first three repetitions in laparoscopic group (mean scores: 2.92±2.14, 4.96±2.53, and 5.52±2.82, respectively), the visualisation group performed significantly better ($p < 0.05$), suggesting a measurable benefit of mental rehearsal between physical attempts.

Conclusions: Visualisation is an effzctive complement to physical practice in laparoscopic training. It enables comparable skill acquisition to repeated hands-on training and offers significant advantages over limited physical repetition alone. These findings suggest that the integration of structured visualisation techniques into surgical education curricula might be a time-efficient and resource-conscious approach for developing laparoscopic skills.

Keywords: Laparoscopy; Pelvic Trainer; Surgical Training; Visualisation

ENHANCING TEACHING EXCELLENCE IN INTERNAL MEDICINE EDUCATION: EXPERIENCES AND CHALLENGES

Tina Dušek[1,2]

[1] University of Zagreb School of Medicine, Department of Internal Medicine, Zagreb, Croatia
[2] Department of Internal Medicine, Division of Endocrinology, University Hospital Center Zagreb, Zagreb, Croatia

Corresponding author: tdusek@mef.hr

The Department of Internal Medicine at the University of Zagreb School of Medicine is continuously engaged in improving the quality and effectiveness of undergraduate teaching. Through systematic reflection and feedback, several key challenges have been identified: double loyalty of faculty members who are simultaneously clinicians and educators, lack of protected teaching time, limited physical space due to ongoing building reconstruction in Zagreb, large student cohorts, insufficient formal training in medical education, inconsistencies in assessment practices, and imprecisely defined learning outcomes. In response, a comprehensive set of measures has been introduced. These include continuous student evaluation of teaching performance with transparent reporting of results, regular departmental meetings to identify teaching gaps, and faculty development initiatives focused on assessment design. A USMLE-style written exam based on clinical vignettes was implemented, following structured training in question writing and continuous psychometric analysis. To support this shift, case-based learning was introduced across the curriculum, ensuring alignment between teaching methods, assessment, and clinical reasoning development. Additional reforms comprise formative ECG quizzes as prerequisites for final exams and numerous self-assessment quizzes available through the learning management system. These interventions have led to a steady improvement in student satisfaction with internal medicine teaching and a stronger alignment between learning outcomes, assessment, and teaching practice. The Department remains committed to fostering a culture of reflective practice, data-informed decision-making, and continuous professional development in medical education.

Keywords: Case-Based Learning; Faculty Development; Internal Medicine; Program Evaluation; Teaching

DEVELOPMENT OF THE EDUCATIONAL PROCESS IN PUBLIC HEALTH OVER TIME – EXPERIENCES FROM THE MEDICAL FACULTY, UNIVERSITY OF MARIBOR – CASE REPORT

Olivera Stanojević Jerković[1], Zoran Simonović[2], Tit Albreht[3]

[1] National Institute of Public Health, Department of Noncommunicable Diseases, Maribor, Slovenia
[2] National Institute of Public Health, Department of Communicable Diseases, Maribor, Slovenia
[3] National Institute of Public Health, Centre for Health Services Research, Ljubljana, Slovenia, Medical Faculty, University of Maribor

Corresponding author: olivera.stanojevic@nijz.si

Aim: The main challenge in establishing and developing the pedagogical process of teaching Public health at the Medical Faculty of the University of Maribor was the recognition that public health is not a traditional, clinically oriented discipline focused on the individual. Students were not accustomed to "thinking" in public health terms. Our goal was that, upon completion, students would understand the essence and importance of public health, both for society as a whole and for their future professional practice. This required an "out-of-the-box" perspective and the use of clear, engaging, and innovative approaches.

Case Report: For teachers, challenges in implementing seminars included organizational issues (scheduling within an already busy curriculum dominated by clinically oriented subjects), the selection of content (presenting the wide scope of public health within a limited timeframe while ensuring comprehension), and the delivery (interactive approaches, practical relevance, and ensuring active participation despite large groups). For students, challenges involved recognizing the relevance of public health, adopting its methods, perspective, developing critical thinking, preparing concise presentations for peers, and leading discussions – activities that strengthened not only their knowledge but also communication skills and assertiveness. In practical exercises, teachers faced additional challenges: ensuring equal inclusion of all students, motivating active participation, emphasizing public health reasoning rather than clinical detail, and maintaining variety and dynamism (e.g., alternating between lecturer and student engagement, introducing short active breaks). Regular annual updates of content were necessary, given the emergence of new public health issues.

Conclusions: Our experience shows that each new generation of medical students arrives more informed (through digital media), more demanding, and more critical, with distinct initial attitudes toward public health. As tutors, we need to establish respectful and trusting relationships through clear communication, flexibility, and continuous acquisition of new skills and teaching approaches. The ultimate task is to gradually, unobtrusively, and in a student-friendly manner, convey the value of public health knowledge, skills, and competencies for their future professional roles.

Keywords: Educational Measurement; Public Health; Students; Teaching Methods

AWARENESS AND READINESS OF DEPARTMENT OF RADIOLOGY FACULTY MEMBERS FOR MODERNIZING MEDICAL EDUCATION: EXPERIENCES AND ATTITUES TOWARDS MERLIN LEARNING MANAGEMENT SYSTEM AND FLIPPED CLASSROOM

Tin Nadarević[1,2], Jelena Rnjak[1,2], Petra Valković Zujić[1,2]

[1] Clinical Hospital Center Rijeka, Department of Diagnostic and Interventional Radiology, Rijeka, Croatia
[2] Faculty of Medicine of the University of Rijeka, Department of Radiology, Rijeka, Croatia

Corresponding author: tin.nadarevic@medri.uniri.hr

Aim: This study aimed to evaluate the awareness, perceptions and readiness of faculty members in the Department of Radiology, Medical Faculty, University of Rijeka toward implementing modern educational methods, focusing on the Merlin learning management system (LMS) and the flipped classroom model. The goal was to explore current use, perceived benefits and challenges, and to identify faculty needs for training and institutional support.

Materials and Methods: An online survey was conducted between 16 and 19 September 2025 among 18 faculty members, of whom 13 responded (72% response rate). Participants represented diverse academic ranks, including assistants, PhD holders, and associate or full professors. The questionnaire consisted of two sections: 1) use and evaluation of the Merlin LMS, and 2) perceptions and experiences with the flipped classroom model. Data were analyzed using descriptive methods.

Results: All participants reported prior experience with the Merlin LMS, primarily using it to share teaching materials, manage assignments, and communicate. Advanced features, such as progress tracking, were rarely used. Five out of eighteen respondents described a clear understanding of the system, while the rest reported only partial familiarity. Common challenges included time constraints, limited technical knowledge, and occasional technical issues. Most respondents (nine out of thirteen) were familiar with the flipped classroom model, though only five reported a strong understanding. The majority (10/13) perceived it as useful for improving teaching quality through increased student engagement, active learning, and more effective use of classroom time. However, barriers included extensive preparation workload, uncertainty about student preparation, and limited training. Across both sections, faculty consistently emphasized the need for structured support in the form of workshops, mentoring, written guidelines, and technical assistance.

Conclusions: Faculty members in the Department of Radiology demonstrate a positive attitude and moderate readiness to modernize medical education through active learning models and digital platforms. Although awareness and basic engagement are high, effective integration of these innovations requires institutional support, training, and the sharing of best practices.

Keywords: Computer-Assisted Instruction; Medical Education; Medical Faculty; Online Systems; Teaching

MEDICAL SPECIALIST TRAINING IN CROATIA – ARE WE MAKING PROGRESS?

Krešimir Luetić[1,3], Ivan Raguž[1,4], Ivan Lerotić[1,5,6], Boris Ujević[1,6,7], Jadranka Pavičić Šarić[1,8,9], Samija Ropar[1,10], Mario Malović[1,11], Lada Zibar[1,12,13], Vesna Štefančić Martić[1,14], Nikola Prpić[18], Ivan Bekavac[1,15], Vikica Krolo[1], Ines Balint[1]

[1] Croatian Medical Chamber, Zagreb, Croatia
[2] University Hospital Sveti Duh, Department of Gastroenterology and Hepatology, Zagreb, Croatia
[3] University of Zagreb, School of Medicine, Zagreb, Croatia
[4] University Hospital Sveti Duh, Department of Otorhinolaryngology, Zagreb, Croatia
[5] University Hospital Centre Sestre milosrdnice, Department of Gastroenterology, Zagreb, Croatia
[6] Croatian Catholic University, Zagreb, Croatia
[7] University Hospital Sveti Duh, Department of Gynecology and Obstetrics, Zagreb, Croatia
[8] University Hospital Merkur, Department of Anesthesiology, Zagreb, Croatia
[9] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[10] General Hospital Karlovac, Department of Pathology, Karlovac, Croatia
[11] University Hospital Centre Sestre milosrdnice, Department of Traumatology, Zagreb, Croatia
[12] University Hospital Merkur, Department of Nephrology, Zagreb, Croatia
[13] Josip Juraj Strossmayer University of Osijek, Faculty of Medicine, Osijek, Croatia
[14] Croatian Institute of Public Health, Zagreb, Croatia
[15] Children's Hospital Zagreb, Department of Anesthesiology, Zagreb, Croatia

Corresponding author: kresimir.luetic@hlk.hr

Aim: The aim of this article was to assess progress in medical specialist training in Croatia by analyzing residents' experiences, achieved competencies, mentoring quality and working conditions using data from the second wave of the Study on the Croatian Medical Profession.

Materials and Methods: This article is based on a descriptive analysis of data from the second wave of the Study on the Croatian Medical Profession conducted by the Croatian Medical Chamber in 2024. The national longitudinal survey included 977 residents across all medical specialties. Data were collected using a structured questionnaire with more than 100 items covering working conditions, education and training, mentoring, management, work–life balance and burnout. Results were analyzed descriptively and compared with data from the first wave conducted in 2022.

Results: In 2024, only 17.3% of residents agreed or strongly agreed that they had achieved professional competencies in accordance with their specialization plan, compared with 19% in 2022. More than half (52.8%) reported never having discussed their specialization plan with their main mentor, a proportion unchanged from the first wave, while regular discussions were reported by only 27.2%. Adequate opportunities to acquire practical procedures appropriate to the level of training were reported by only 32.4% of residents, while 28.1% agreed that their current work corresponds to acquired competencies, with no improvement compared with 2022. Workload indicators remained unfavorable: 53.4% of residents reported insufficient time to complete work obligations (55% in 2022), 44.7% often or always covered multiple work sites, and only 12.3% reported protected time for education during working hours. Mentoring quality indicators were also low. Adequate feedback on strengths and weaknesses was reported by 24.1% of residents, while clear expectations set by the main mentor were confirmed by 31.6%, without improvement over time.

Conclusions: Despite long-standing recognition of deficiencies, significant progress in specialist training in Croatia has not been achieved. Persistently low competency attainment, insufficient mentoring and excessive workload underscore the need for comprehensive reform, including centralized management of specialist training, structured mentorship, quality control of training implementation and systematic monitoring of residents' progress. Transferring public authority for managing specialist training from the Ministry of Health to the Croatian Medical Chamber would strengthen professional self-regulation and support the transition to competency-based specialist education aligned with national workforce needs.

Keywords: Education; Medical Training; Mentors; Professional Competence; Residency; Workforce Planning

WORKSHOP
FROM VERBS TO DOMAINS: HOW TO RECOGNIZE A GOOD LEARNING OUTCOME?

Ivan Banovac, Vedran Katavić

University of Zagreb School of Medicine, Department of Anatomy and Clinical Anatomy, Zagreb, Croatia

Corresponding author: vedran.katavic@mef.hr

The aim of this workshop is to enhance participants' ability to formulate clear, measurable, and constructively aligned learning outcomes by correctly linking verbs to cognitive processes and knowledge dimensions within Bloom's taxonomy. Constructive alignment is a cornerstone of contemporary medical education, ensuring coherence between intended learning outcomes, teaching and learning activities, and assessment methods. However, writing clear and measurable learning outcomes remains a common challenge among educators. This interactive workshop will aid participants in recognizing well-constructed learning outcomes by linking active verbs to the appropriate domains and cognitive levels of Bloom's taxonomy. The workshop will include two hands-on activities. In the first activity, participants will classify learning outcomes into the correct fields of the cognitive domain matrix. This activity will reinforce understanding of the taxonomy and highlight frequent misconceptions about verb selection and domain alignment. In the second activity, participants will analyze examples of different learning outcomes, identifying linguistic and structural features that affect their clarity, measurability, and alignment with assessment. Through collaborative discussion, participants will develop practical strategies for refining their own outcomes to support constructive alignment in course design. By the end of the workshop, participants will be able to: (1) identify inconsistencies between verbs, domains, and cognitive levels; (2) distinguish features of effective and ineffective learning outcomes; and (3) apply criteria for improving learning outcomes in their own teaching contexts.

Keywords: Competency-Based Education; Educational Models; Learning Outcomes; Medical Education

Session C13.
KEYNOTE TRANSFORMATIVE SESSION – TRENDS IN ASSESSMENT

PAST, PRESENT, AND FUTURE: ASSESSMENT FOR LEARNING AT NBME

Boris Vilić

National Board of Medical Examiners (NBME), Philadelphia, United States of America

Corresponding author: bvilic@nbme.org

The aim of this presentation is to invite faculty to reimagine assessment as a dynamic element of learning rather than a static measure of performance. Drawing on lessons from the National Board of Medical Examiners (NBME) and its collaborations with medical schools worldwide, the session explores how thoughtful integration of assessment for, of, and as learning can enhance both teaching and student development. Through examples of formative and summative tools, research on validity and outcomes, and faculty-driven innovations, participants will reflect on how assessment data can be used to promote dialogue, self-directed learning, and continuous program improvement. The presentation emphasizes practical, scalable ideas – such engaging students in performance discussions, or drawing on shared research to inform curricular decisions. Complementary NBME resources, including the Item-Writing Guide and NBME® Academy professional development offerings, will be highlighted as freely available tools that support faculty in fostering assessment literacy and evidence-informed teaching. The session underscores the evolving role of educators as designers of meaningful assessment experiences that connect measurement, learning, and professional identity formation.

Keywords: Assessment; Faculty Development; Feedback; Medical Education; Psychometrics

AI IN FUTUREMED ASSESSMENT: LARGE LANGUAGE MODELS GRADING STUDENT NOTES

Tama S. Thé[1], Candace Y. Pau[2], Nayef Chahin[3], Christopher J. Nash[4]

[1] University of Kentucky College of Medicine, Department of Emergency Medicine, Lexington, United States of America
[2] Kaiser Permanente Bernard J. Tyson School of Medicine, Department of Clinical Science, Pasadena, United States of America
[3] Virginia Commonwealth University, Children's Hospital of Richmond, Department of Pediatrics, Richmond, United States of America
[4] Duke University Hospital, Department of Emergency Medicine, Durham, United States of America

Corresponding author: Tama.The@uky.edu

Aim: To determine the reliability and validity of using a widely available, zero-shot large language model to grade medical student post-encounter notes from Objective Structured Clinical Examinations, and to examine how rubric structure and case presentation influence grading performance.

Materials and Methods: We analyzed 433 de-identified notes written by third-year medical students across seven standardized cases and scored previously by two faculty raters using a seven-domain rubric (history, physical examination, summary statement, differential diagnosis, justification, plan, organization). The same rubric was provided to a large language model in two configurations: repeated scoring without explanations (thirty iterations per note) and repeated scoring with step-by-step rationales (four iterations per note). Internal consistency was evaluated with the intraclass correlation coefficient; agreement and relative ordering were evaluated with quadratic weighted kappa, one-way analysis of variance with Tukey post-hoc testing, pairwise t-tests, and rank-order correlation. Subgroup analyses examined performance by case type, domain, and inferred case difficulty.

Results: Human raters showed substantial to excellent internal agreement (intraclass correlation coefficient 0.880). The large language model demonstrated very high internal consistency without explanations (0.943) and moderately high consistency with explanations (0.762). Absolute scores diverged: human graders assigned the highest mean scores, the model with explanations was intermediate, and the model without explanations was lowest; differences were statistically significant across the full sample and within every case type. Agreement between human graders and the model was limited overall, although relative ordering of notes was moderately preserved, and alignment improved when the model produced rationales, particularly for analytic domains such as physical examination and differential diagnosis. The organization domain showed weaker consistency and alignment, suggesting rubric–method mismatch. Case difficulty did not meaningfully affect model error.

Conclusions: A zero-shot large language model can grade post-encounter notes with high repeatability and stable behavior across cases and rubric domains, but absolute score differences compared with faculty highlight the need for calibration and potential rubric refinement before high-stakes use. Thoughtful integration – favoring rationale-based scoring, aligning domain criteria, and using automated scoring to augment rather than replace faculty – may reduce rater workload, speed feedback, and surface opportunities to improve assessment design.

Keywords: Artificial Intelligence; Clinical Assessment; Natural Language Processing; Objective Structured Clinical Examinations

THE SOCRATIC TUTOR: A STUDENT-DEVELOPED GENERATIVE AI PLATFORM FOR MEDICAL EDUCATION

Tama S. Thé[1], Matthew Bernard[1], Hunter Colson[1], Christopher J. Nash[2], Hubert Ballard[1]

[1] University of Kentucky College of Medicine, Department of Emergency Medicine, Lexington, United States of America
[2] Duke University Hospital, Department of Emergency Medicine, Durham, United States of America

Corresponding author: Tama.The@uky.edu

Aim: To evaluate the *Socratic Tutor*, a student-developed artificial intelligence platform designed to enhance learning efficiency, self-assessment, and critical reasoning among medical students through institutionally governed generative AI.

Materials and Methods: The So*cratic Tutor* combines three integrated tools: (1) an adaptive Socratic chatbot that conducts guided, conversational tutoring based on uploaded course materials; (2) an automated question generator that produces USMLE-style items directly linked to faculty learning objectives; and (3) a secure analyt-

ics dashboard that visualizes user performance, accuracy, and engagement trends. All data are processed within a closed university API to ensure FERPA compliance and protect faculty intellectual property. The research employs a quasi-experimental pre-/post-test design involving first- and second-year students across all UK College of Medicine campuses. Propensity Score Matching (PSM) will balance user and non-user groups by MCAT, GPA, and baseline course scores. Quantitative measures include course exam performance, comprehensive block exams, and Step 1 scores. Qualitative analyses will evaluate changes in study habits, perceived efficiency, and student attitudes toward AI-assisted learning.

Results: Preliminary deployment revealed high engagement and overwhelmingly positive sentiment, with early users reporting improved comprehension and faster concept mastery through interactive dialogue. Engagement metrics indicate that heavy users exhibited both greater time efficiency and superior test outcomes compared to low-use counterparts.

Conclusions: The *Socratic Tutor* represents a novel educational framework for integrating generative AI responsibly within a medical curriculum. Its architecture supports longitudinal data analysis, adaptive feedback, and curricular mapping, laying the groundwork for predictive analytics that can identify at-risk learners earlier in training. Developed by students for students, this project demonstrates the potential for AI co-design within medical education and offers a replicable model for other institutions seeking to modernize learning environments while safeguarding data integrity.

Keywords: Artificial Intelligence; Computer-Assisted Instruction; Curriculum Development; Learning Analytics; Natural Language Processing

ADVANCING TEAMWORK AND COMMUNICATION ASSESSMENT THROUGH VIRTUAL REALITY SIMULATION IN MEDICAL EDUCATION

Natascha Heise[1], Mariela Lane[2], Laura Mulvey[3], Nuno S. Osório[4]

[1] Macon and Joan Brock Virginia Health Sciences at Old Dominion University, Department of Biomedical and Translational Sciences, Norfolk, United States of America
[2] Texas Tech University Health Sciences Center El Paso – Paul L. Foster School of Medicine, Department of Medical Education, El Paso, United States of America
[3] University of Vermont Larner College of Medicine, Department of Emergency Medicine, Burlington, United States of America
[4] University of Minho School of Medicine, Department of Interdisciplinary Development in Medicine, Braga, Portugal

Corresponding author: heisen@odu.edu

Aim: Teamwork and communication are critical competencies that directly influence patient outcomes, particularly in high-stakes resuscitation scenarios. Traditional simulation-based education effectively develops these skills but remains resource-intensive, logistically complex, and difficult to scale, especially in underserved or geographically isolated environments. Virtual Reality (VR) offers a dynamic, reproducible, and accessible platform for immersive team training and assessment. This project, developed through the National Board of Medical Examiners (NBME) Strategic Educator Enhancement Fund (SEEF) Fellowship, investigates how VR can be used to evaluate and enhance teamwork and communication using the Team Emergency Assessment Measure (TEAM™) instrument, which is supported by substantial validity evidence.

Materials and Methods: In this multi-institutional study, healthcare professionals participate in a standardized cardiac arrest scenario (medvr.education) involving defibrillation, CPR, pharmacologic intervention, airway management, and post-resuscitation transfer. TEAM™ scores across leadership, teamwork, and task management domains are collected alongside participant perceptions of engagement, realism, and educational value. The study aims to (1) determine whether VR-based simulations can effectively assess teamwork and communication among experienced healthcare teams using the TEAM™ instrument; (2) explore participants' perceptions of how VR impacts teamwork and communication skills; and (3) examine how VR performance scores, which assess technical aspects of team performance, correlate with communication and teamwork domains.

Results: Data collection and analysis are ongoing. Pilot testing indicates the VR simulation effectively elicits teamwork and communication behaviors measurable by the TEAM™ instrument.

Conclusion: This project showcases the NBME–faculty collaboration model developed through the SEEF Fellowship as an adaptable framework for advancing assessment innovation and faculty development that can be adopted globally to enhance competency-based medical education.

Keywords: Assessment; Communication; Medical Education; Simulation Training; Teamwork; Virtual Reality

ASSESSMENT OF RESULTS IN ANATOMY OVER A DECADE: TRENDS AND CRITICAL ROLE OF CONTINUOUS ASSESSMENT

Mirko Armanda[1], Ivica Grković[2]

[1] University of Split School of Medicine, Split, Croatia
[2] University of Split School of Medicine, Department of Anatomy, Histology and Embryology, Split, Croatia

Corresponding author: mirko.armanda@mefst.hr

Aim: Optimizing assessment strategies in medical education requires understanding how student performance evolves; however, comprehensive, multi-year analyses remain rare. This research aimed to provide critical evidence by examining decade-long trends in examination patterns and identifying key predictors that could inform evidence-based curricular interventions.

Materials and Methods: This retrospective longitudinal study analysed anatomy examination results at the University of Split School of Medicine over 11 years (2013/14–2023/24), involving 1,116 medical students. The anatomy exam format includes four elements, each contributing to the final grade with specific weighting: continuous assessment (CA) (10 %), written (40 %), practical (20 %), and oral examination (30 %). Data analysis included linear regression for temporal trends, correlation analysis for exam component and failure rate relationship, and comparison of performance across exam components, with CA being most comprehensively examined.

Results: Analysis revealed a significant downward trend in overall pass rate (-0.7 % per year, $P = 0.005$), with an alarming post-COVID exacerbation (-3.2 % per year, $R^2 = 0.996$, $P = 0.041$). Also, grade distribution shifted toward lower grades (unsatisfactory and satisfactory), reaching record levels, even surpassing the proportion of higher grades (good, very good, and excellent). At the cohort level, CA performance demonstrated a very strong correlation with overall failure rate (Pearson r = -0.801, $P = 0.002$). Linear regression confirmed its predictive validity ($R^2 = 0.642$, $P = 0.003$), with a 1 percentage point increase in mean CA score associated with a 0.34 percentage point decrease in the failure rate. Furthermore, students who passed in earlier sittings achieved significantly better CA scores, with a 19.5% decline between the 1st and 5th sitting ($P < 0.001$). Longitudinal analysis of CA results (2013/14–2023/24) revealed a cumulative decline of 15.9 % over the study period ($P < 0.001$).

Conclusion: Student engagement during the teaching block strongly correlates with final examination success. Based on these findings, we implemented a data-driven curricular adjustment by increasing CA weighting from 10 % to 20 % to promote consistent engagement and address the declining performance trend.

Keywords: Anatomical Knowledge; Anatomy Teaching; Evaluation Techniques; Gross Anatomy; Students' Performance

MEASURING LEARNING OUTCOMES AMONG DOCTORS IN TRAINING, UK EXPERIENCE

Zlatan Ibradzic

Queen Victoria Hospital NHS Trust, Department of Burns and Plastic Surgery, East Grinstead, United Kingdom

Corresponding author: zibradzic@gmail.com

How do you keep a track of progression and measure learning outcomes among doctors in training? For number of years, NHS had introduced mandatory portfolio for all doctors, on all levels of training. Number of portals such as ISCP (Intercollegiate Surgical Curriculum Programme) are easy way for trainees to upload their educational achievements online, such as discussion of cases or surgical operations. In addition, it is tool that allows insight to trainee's mentors to their progression and it is essential evidence on annual trainee's review (appraisal) as well for the CCT (Certificate of Completion of Training). Essentially, surgical portfolio is trainee's brickwork to track and prove their progression during training, but also a step into further professionalism as consultant.

Keywords: Learning Outcomes; Mentorship; Performance Evaluation; Postgraduate Education; Surgical Education; Trainee Portfolio

Session C14.
HEALTHCARE PROFESSIONS STUDENTS' PERSPECTIVE ON MEDICAL EDUCATION

AN INSIGHT INTO SECOND-YEAR MEDICAL STUDENTS' EXPERIENCES OF CLINICAL TRAINING

Mirjam Šarac[1], Lara Herceg[1], Lorena Korpivnjak[1], Tihana Magdić-Turković[1,2], Lidija Fumić Dunkić[1,2]

[1] Croatian Catholic University, School of Medicine, Zagreb, Croatia
[2] Department of Anesthesiology, Intensive Care and Pain Medicine, Sestre milosrdnice University Hospital Center, Zagreb, Croatia

Corresponding author: lori.koprivnjak@gmail.com

Aim: Our research focuses on the experiences of second-year medical students at the Catholic University of Croatia during their first clinical practice within the Virtual Patient course. Combining lectures with many hours of clinical skills training, the program equips students with skills essential for the management of emergency medical conditions and the care of patients with compromised vital functions. Such early exposure to clinical practice is what distinguishes our faculty from other medical schools in Croatia.

Materials and Methods: We conducted a Google Forms survey with eighteen questions exploring students' experiences during the *Virtual Patient* course. Fifteen questions used a five-point Likert scale, one was demographic, one was multiple-select (three choices), and the final question was open-ended. The study included twenty-seven third-year medical students who had completed the course in their second year. Data were analyzed using descriptive statistics automatically generated by Google Forms.

Results: In the multiple-choice questions using a five-point Likert scale, all participants expressed their agreement with the statements that the experience of early clinical training was positive, that it served as motivation for further medical education, and that it helped them better understand the theoretical knowledge gained through lectures. In the multiple-select question, participants were asked to choose three elements of their clinical training they found most useful, and most often selected learning clinical skills for managing basic emergency interventions, easier integration of theory and practice and increased motivation for learning and completing their studies. Twenty-six students stated that performing clinical skills at an early stage of learning increased their confidence in working with patients. The majority of students stated that observing their mentor professors in real working conditions further motivated them and helped them understand how knowledge is applied in practice.

Conclusion: Based on the results of our research, we conclude that the integration of courses with extensive clinical skills training is beneficial even in the second year of medical education, although at this stage of study students may still lack a substantial amount of theoretical knowledge. Despite the fact that organizing a course with clinical training this early in medical education is quite complex, it provides many benefits for medical students and should be implemented in the standard curriculum.

Keywords: Clinical competence; Education; Medical students; Motivation

INTERMed PROJECT: HOW STANDARDISED TEACHING, LEARNING AND ASSESSING BASIC CLINICAL SKILLS IN INTERNAL MEDICINE INCREASES STUDENT AND TEACHER SATISFACTION

Lea Cofek[1], Nina Pereza[2,3], Davorka Lulić[4,5], Goran Hauser[4,6], Alen Ružić[4,5]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] University of Rijeka, Faculty of Medicine, Centre for Improving Teacher Competencies and Communication Skills, Rijeka, Croatia
[3] University of Rijeka, Faculty of Medicine, Department of Medical Biology and Genetics, Rijeka, Croatia
[4] University of Rijeka, Faculty of Medicine, Department of Internal Medicine, Rijeka, Croatia
[5] Clinical Hospital Centre Rijeka, Clinic for Cardiovascular Diseases, Rijeka, Croatia
[6] Clinical Hospital Centre Rijeka, Clinic for Internal Medicine, Rijeka, Croatia

Corresponding author: lcofek@student.uniri.hr

Aim: Given considerable discrepancies among clinical teachers in teaching and assessing basic clinical skills in internal medicine (including patient history-taking and physical examination), the Department of Internal Medicine and the Centre for Medical Education at the Faculty of Medicine in Rijeka jointly initiated the educational project INTERMed. The project aimed to virtually standardise the mandatory course Clinical Propedeutics through contemporary evidence-based educational methodologies, including flipped classroom, Peyton's and Pendleton's methods, and objective structured clinical examinations. This study evaluated the impact of INTERMed on the satisfaction of medical students and educators regarding the teaching and learning of basic clinical skills.

Materials and Methods: A multi-phase cross-sectional study was conducted between October 2024 and May 2025, involving 193 medical students [83/120 (69.2%) fourth-year and 74/104 (71.2%) fifth-year students who had completed the unreformed Clinical Propedeutics course, and 36/114 (31.6%) third-year students enrolled in the INTERMed project], as well as 12 clinical teachers participating in the project. Distinct, comprehensive, and standardised questionnaires were distributed to each participant group, covering periods before, during, and after the INTERMed project, and assessed attitudes, behaviours, and knowledge regarding teaching and learning of clinical skills.

Results: The median overall satisfaction of students and educators following the INTERMed project was 5 (IQR 5–5) for both asynchronous online preparations (flowcharts, demonstration videos, self-assessment tests) and onsite practical sessions. A statistically significant difference was observed in students' perceptions of the consistency among educators in teaching and assessing identical clinical skills, comparing those who completed the Clinical Propedeutics course before and after the INTERMed project (median 4th/5th year = 2, IQR 2–3; median 3rd year = 4, IQR 4–5; $P<0.001$). At onsite practicals, 77.8% of INTERMed students received teacher instruction and 88.3% observed a patient demonstration, compared with 31.2% and 26.7% of senior students, respectively ($P<0.001$). Furthermore, 94.4% of INTERMed students received feedback after performing clinical skills, compared with 28% of senior students ($P<0.001$). Unlike senior students (27.4%), all INTERMed students prepared consistently for practicals, with 83.3% spending under 30 minutes, reporting readiness and confidence.

Conclusion: The INTERMed project successfully standardised clinical skills teaching, enhancing confidence, engagement, and satisfaction for both learners and educators.

Keywords: Clinical Skills; Flipped Classroom; Internal Medicine; Medical Education; Objective Structured Clinical Exam; Teaching Standardisation

FROM STRESS TO SUCCESS: HOW TARGETED SHORT TESTS IMPROVE PERCEIVED LEARNING OUTCOMES

Ana Deškin[1], Lara-Nika Holjevac Stasiow[1], Tina Dušek[1,2]

[1] University of Zagreb, School of Medicine, Zagreb, Croatia
[2] Clinical Hospital Centre Zagreb, Department of Endocrinology, Zagreb, Croatia

Correspondig author: anadeskin.ad@gmail.com

Aim: This study compared medical student satisfaction with learning when assessed by short, targeted quizzes on Electrocardiography (ECG) reading and interpretation versus a comprehensive end-of-course Internal Medicine exam. We hypothesized that focused quizzes on identified difficult curriculum areas would improve students' perceived knowledge and satisfaction relative to traditional end-of-course summative exams.

Materials and Methods: We conducted a cross-sectional study of 150 fourth-year medical students at the University of Zagreb School of Medicine following their completion of the Internal Medicine course. Of these, 148 completed the ECG quiz survey, and all 150 completed the Internal Medicine exam survey. The ECG quiz assessed reading and interpretation skills, whereas the Internal Medicine exam was a comprehensive final assessment that did not include ECG questions. Students self-reported satisfaction with their knowledge on a scale from 0 (not at all satisfied) to 100% (completely satisfied). Due to non-normal distributions, we used the Mann-Whitney U test for analysis and estimated effect size with Cohen's d and rank-biserial correlation.

Results: Students reported significantly higher perceived knowledge after completing the ECG quiz (mean 86.46%, median 100%) compared to after the comprehensive internal medicine exam (mean 74.61%, median 75%). The 11.85 percentage point difference between these two assessment types was statistically significant ($p < 0.001$), supporting our hypothesis. The effect size was moderate (Cohen's $d = 0.69$). Furthermore, 52% of respondents in the ECG quiz survey reported maximum satisfaction, compared to 18% in the internal medicine exam survey.

Conclusion: Short, targeted assessments in challenging areas of a course (such as ECG interpretation in Internal Medicine) lead to greater student satisfaction and higher perceived knowledge than traditional comprehensive exams. When a topic is widely recognized as difficult, implementing a focused evaluation can help students consolidate knowledge and feel more confident in their competence, rather than offering only comprehensive assessments. This approach may support improved engagement and long-term learning among medical students in demanding subjects like internal medicine.

Keywords: Electrocardiography; Internal Medicine; Medical Education; Surveys and Questionnaires

LEVEL OF EDUCATION OF MEDICAL STUDENTS IN AIRWAY MANAGEMENT SKILLS

Mirela Kolak[1], Tin Plaftak[1], Renata Curić Radivojević[1,2], Dinko Tonković[1,2]

[1] University of Zagreb, School of Medicine, Zagreb, Croatia
[2] University Hospital Centre Zagreb, Clinic for Anesthesiology, Resuscitation, Intensive Care Medicine and Pain Therapy, Zagreb, Croatia

Corresponding author: mkolak@student.mef.hr

Aim: To evaluate medical students' education and competence in airway management.

Materials and Methods: In 2024/2025, a Google Docs survey was distributed to 5th- and 6th-year medical students at the University of Zagreb via LMS and WhatsApp, with departmental approval.

Results: A total of 79 students completed the survey (54.4% 5th year, 45.6% 6th year). Of these, 70.9% attended anesthesiology classes. Most students (94.9%) believed endotracheal intubation should be taught during rotations, while only 1.3% disagreed; 1.3% felt professors should demonstrate intubation but mastery was unnecessary due to easier alternatives such as i-gel, and 1.3% supported learning airway maintenance without intubation. Regarding basic airway techniques, all identified head tilt, 94.9% chin lift, 93.7% jaw thrust, 49.4% airway adjuncts, 35.4% mask ventilation, and 1.3% lateral head positioning. For advanced methods, 92.4% selected indirect laryngoscopy, 91.1% direct laryngoscopy, 75.9% supraglottic device, 74.7% fiberoptic intubation, 50.6% retrograde intubation, and 2.5% cricothyroidectomy. When asked which skills should be acquired

during medical studies, the most frequent were oropharyngeal tube placement (97.5%), mask ventilation (93.7%), direct intubation (92.4%), supraglottic device placement (87.3%), and nasopharyngeal tube placement (84.8%), with fewer supporting cricothyroidectomy (45.6%), indirect intubation (36.7%), fiberoptic intubation (15.2%), and). Practical exposure varied: 48 placed an laryngeal mask airway on a mannequin, 33 during anesthesiology rotations, 30 in the fundamental of clinical skills course, 5 in first aid, 8 never, 2 unsuccessfully, and 4 elsewhere. Only 18 students placed an LMA on patients under supervision, mostly during exercises or rotations, while 61 had not. For intubation, 47 practiced direct laryngoscopy on mannequins (mostly in courses or rotations), 9 attempted video laryngoscopy, and fewer succeeded on patients (16 with DL, 9 with VL). Unsuccessful attempts were reported by several students in both mannequin and patient practice.

Conclusion: Airway management forms the cornerstone of both anesthesiology and resuscitation. Therefore, it is vital for every physician to develop at least basic competence in this crucial skill. This study shows that medical students at the University of Zagreb value airway management and support learning both basic and advanced techniques. While theoretical knowledge is strong, practical experience – especially with advanced procedures like intubation and video laryngoscopy – is limited. Expanding structured, supervised, and simulation-based training is essential to build competence, confidence, and ensure patient safety.

Keywords: Airway Management; Education; Endotracheal Intubation; Supraglotic Airway Devices

MEDICAL STUDENTS' PERSPECTIVES ON ARTIFICIAL INTELLIGENCE: A COMPARATIVE STUDY FROM CROATIA AND SLOVAKIA

Anamaria Malešević[1], Anto Čartolovni[1,2]

[1] Catholic University of Croatia, Digital Healthcare Ethics Laboratory (Digit-HeaL), Zagreb, Croatia
[2] Catholic University of Croatia, School of Medicine, Zagreb, Croatia

Corresponding author: anamaria.malesevic@unicath.hr

Aim: The aim of this study was to explore medical students' attitudes, opinions, and intentions regarding the use of artificial intelligence (AI) in future patient care. As AI is transforming medicine and reshaping the physician - patient relationship, understanding the perspectives of future physicians is of great importance. Given the social similarities between Croatia and Slovakia, the study also sought to identify potential differences in students' views across these two countries.

Materials and Methods: The study was conducted between May and November 2022 among medical students from five Croatian and three Slovak medical schools, with international students analyzed as a separate subgroup. A total of 1701 students from all years of study were included using a non-probabilistic convenience sample. Data were collected during lectures through a paper-based survey or, at one Slovak university, via an online link. The questionnaire was an original instrument developed by the Digit-HeaL research team. All statistical analyses were conducted using SPSS version 25.

Results: Only 38.2% of students felt well acquainted with the concept of AI, and just one in five reported being introduced to its use in healthcare during their studies, while 14% pursued additional research outside the curriculum. Despite this limited exposure, 44.8% expected to actively use AI in their future practice, although 35.3% doubted they would graduate with sufficient skills to do so. Most students (86.6%) agreed that AI can be a helpful tool for physicians. At the same time, 59.1% believed it could negatively impact the patient–physician relationship, and 51.3% feared patients would trust physicians less as digital technologies are increasingly implemented, with Slovak and Croatian students expressing stronger concerns than international students. Just over half (53.6%) felt confident they could explain AI technologies to patients if asked, with international students showing the lowest confidence. When considering broader healthcare implications, 48.7% of students believed that implementing AI would improve the healthcare system, 57.8% emphasized that equal access to AI must be ensured, while only 7% supported the idea that patients should directly pay for AI-based diagnosis or treatment.

Conclusion: Medical students recognize the potential of AI as a valuable tool in healthcare, yet report limited formal education and insufficient preparedness to use it in future. The findings highlight the importance of integrating AI-related education into medical curricula, with particular emphasis on preserving the physician - patient relationship.

Keywords: Artificial Intelligence; Medical Education; Medical Students; Physician Patient Relationships

MEDICAL STUDENTS AND AI: GENERATIONAL GAP?

Vedran Vuglić, Mirza Žižak

University of Zagreb, School of Medicine, Zagreb, Croatia

Corresponding mail: vvuglic@gmail.com

The use of generative artificial intelligence (AI) has become increasingly common for university students. These tools provide new possibilities for learning, however, if they remain overlooked by the formal curriculum many opportunities could be missed upon. This study aims to quantify and interpret the habits and opinions of medical students regarding AI tools, with the goal of gaining insight on the exact way they use AI to incorporate these tools easily and effectively in formative medical education. This cross-sectional study was conducted between September 22 and October 15, 2025. During this period, 1st and 4th year students from the University of Zagreb School of Medicine were invited to participate. The study used an anonymous web-based survey. Questions were designed to capture multiple perspectives on the topic. The survey contained 47 questions on a wide range of topics. The survey was answered by 385 students: 283 1st year students and 102 4th year students. 1st year students started using AI tools during high school and 4th year students started once they were already enrolled in higher education. Data analysis used descriptive statistics (median, mean, standard deviation, Shapiro-Wilk normality test, total number of responses, and percentages) and either the chi-square or Mann-Whitney U tests, as appropriate. The survey revealed that the majority of students used AI tools (90,6%) regardless of their study year. The most often used AI tool was ChatGPT by OpenAI with a prevalence of 88,8%. AI tools have become a habit for older students (57,8%) much more so than for the younger ones (39,2%). In question about the usage of generative AI for writing assignments we see the opposite; 1st year students use it more often (40,6%) in contrast with 4th year students (33,3%). They show different levels of trust in AI too. General trust is higher with 4th year (77,5%) compared to 1st year (42,8%). This trend continues in trust for medical related questions: 1st year – 27,9%, 4th year – 61,7%. Questions about checking answers against literature showed that 1st year students check answers more often (59,8% vs. 49,0%) which was logical conclusion of preceding data. This study revealed clear differences between 1st and 4th year medical students in their use and trust in AI tools. Older students showed greater confidence and habitual use, while younger students used AI more cautiously and verified its outputs more often. These results point to a generational gap in digital confidence and highlight the need to include AI literacy in medical education to promote informed and responsible use.

Keywords: Artificial Intelligence; ChatGPT; Learning; Medical Students; Medical Education

Session C15.
ERASMUS+ PROJECTS AS CATALYSTS FOR INNOVATION IN MEDICAL EDUCATION

MISS4HEALTH ERASMUS+ PROJECT: MICROCREDENTIALS IN SOFT SKILLS FOR HEALTHCARE PROFESSIONALS AND STUDENTS

Ilja Tachecí

Charles University in Prague, Faculty of Medicine in Hradec Králové, Czech Republic

Corresponding author: tachecii@lfhk.cuni.cz

This lecture aims to present MISS4Health, an international project that focuses on improving soft skills education for healthcare professionals. The project develops an interactive and modular online course (MOOC) that follows the European Micro-credential Framework. It teaches key skills such as communication, decision-making, leadership, situational awareness, and teamwork. A major part of the learning approach is the use of serious games, which offer a safe and realistic environment to practise complex clinical situations. These games help

increase learner motivation, support learning through experience, and provide immediate feedback that makes it easier to remember and apply new skills in real practice. The course also includes multimedia materials, self-assessment tools, and personalised feedback so that participants can follow their progress and identify what they need to improve. By offering a structured and officially recognised digital training programme that can be used across Europe, MISS4Health supports professional development, encourages lifelong learning, and provides a flexible model that can be adapted to different healthcare settings. Early implementation and pilot testing are expected to show clear improvements in soft skills and higher levels of engagement among participants.

Keywords: Medical Education; Micro-credentials; Serious Games; Soft Skills

ERASMUS+ BLENDED INTENSIVE PROGRAM »DIAGNOSTICS IN GYNECOLOGY« – MARIBOR EXPERIENCE

Iztok Takač[1,2], Jure Knez[1,2], Monika Sobočan[1,2], Milena Orož Črešnar[1], Nina Šimanović[1], Milena Mikluš[2]

[1] University in Maribor, Faculty of Medicine, Maribor, Slovenia
[2] University Medical Centre Maribor, Department of Gynecology and Perinatology, Maribor, Slovenia

Corresponding author: iztok.takac@ukc-mb.si

The Erasmus+ blended intensive program (BIP) »Diagnostics in gynecology« is intended for senior medical students with the aim of developing essential clinical reasoning skills and critical thinking abilities in various clinical situations. Through the theoretical and practical parts of the workshop, students learn how to assess risks and deal with common complications that arise in frequently encountered clinical situations in gynecology. The practical part of the workshop is conducted in accordance with the needs identified in the previously completed virtual part of the program. The virtual part of the program focus primarily on the development of clinical reasoning skills. As part of the virtual part of the program teachers encourage students to think critically and use the available diagnostic tools correctly. In the face-to-face part of the workshop, the lectures are divided so that each day they focus on one of the more commonly used diagnostic techniques in modern gynecology. These are ultrasound, hysteroscopy, laparoscopy and colposcopy. The other part of the day is devoted to the application of theoretical knowledge in a clinical setting. Teachers achieve this by involving students in clinical work with patients, as well as by using learning methods based on specific clinical problems. In the practical part, they also enable students to practice on simulators, where they are able to apply the knowledge acquired in lectures in clinical practice. The exercises take place in parallel in smaller groups. The virtual part of the BIP begins in spring each year, prior to the face-to-face part of the program. Initially, the virtual part is dedicated to assess students' prior knowledge and serve as the basis for the optimal preparation and implementation of the workshop. Subsequently, approaches to critical diagnostic thinking and decision-making processes in modern clinical medicine are presented. The virtual part is also necessary to familiarize students with the online platform that is used to conduct the practical part of the workshop. After the practical workshop is completed, teachers use the virtual platform to reassess the students' clinical diagnostic thinking. In this way, they re-evaluate the knowledge acquired during the workshop and compare the results with the students' initial knowledge. At the Faculty of Medicine in Maribor we organized first BIP »Diagnostics in gynecology« in May 2022. Since then, three more courses were performed. In 2022, there were 28 participants from 6 countries, in 2023 25 participants from 7 countries, in 2024 19 participants from 5 countries and in 2025 23 participants from 10 countries.

Keywords: Combined Program; Diagnostics; Erasmus; Gynecology; Students

AN INNOVATIVE APPROACH TO SUPPORTING CRITICAL THINKING THROUGH THE ONLINE NANO-THINK PROGRAM

Sandra Kraljević Pavelić[1], Marija Spevan[2], Tamara Crnko[1], Željko Jovanović[1]

[1] University of Rijeka, Faculty of Health Studies, Department of Basic Medical Science, Rijeka, Croatia
[2] University of Rijeka, Faculty of Health Studies, Department of Nursing, Rijeka, Croatia

Corresponding author: sandrakp@uniri.hr

Aim: The ERASMUS+ project NANO-THINK aims to explore how digital environments can foster the development of critical thinking among students. In a society where information is abundant but accuracy and credibility often remain low, new competences are required that include the ability to analyze, to critically think and form evidence-based judgments have become some of the key 21st-century competences. The project will accordingly, create a digital-based program for enhancement of critical thinking and explore whether such tool may serve as one possible instrument in fostering critical thinking.

Materials and Methods: The NANO-THINK platform and the corresponding content is developed collaboratively based on the concept of micro- and nano- learning and according to the performed surveys aimed to collect comprehensive insights into the current state of critical thinking skills development in science education within participating Higher Education Institutions (HEIs) students and academic staff in Austria, Croatia, Bosnia and Herzegovina, Serbia and Montenegro.

Results: Findings of the performed gap-analysis of the field, indicate that students ask for a student-centered teaching approach rather than a passive listening approach. They also think that critical thinking exercises should be embedded directly within the curriculum, making it a consistent focus in their educational experience rather than an isolated component. Online resources and modules have also been acknowledged as beneficial supplementary tools to the interactive and integrated approaches. Moreover, gap analysis showed that the major barriers to critical thinking development at HEIs are traditional teaching methods, curriculum constraints and faculty resistance to new teaching practices.

Conclusion: The NANO-THINK project will explore how digital environments can be used to support the cultivation of critical thinking at the Higher Education Institutions (HEIs) when implemented through thoughtful pedagogical design. The micro- and nano- learning approaches may support students to think actively, reflectively and interdisciplinary for an enriched educational experience. The platform will contribute to an emerging educational culture that connects science, technology, and humanities, preparing students for responsible citizenship in the digital era.

Keywords: Critical Thinking; Digital Learning; Education; Interdisciplinarity; Nanolearning; Reflection

HOW THE PART – TIME AND SHORT CYCLE STUDIES ARE IMPLEMENTED IN MEDICAL/HEALTH CARE EDUCATION - EXAMPLE OF PARTISH ERASMUS+ PROJECT

Mirza Oruč[1], Dejan Bokonjić[2], Nemanja Berber[3]

[1] University of Zenica, Faculty of Medicine, Zenica, Bosnia and Herzegovina
[2] University of East Sarajevo, Faculty of Medicine, East Sarajevo, Bosnia and Herzegovina
[3] University of Novi Sad, Faculty of Economics, Subotica, Serbia

Corresponding author: mirza.oruc@unze.ba

The main aim of this paper is to present research conducted over a three-year period in Bosnia and Herzegovina, focusing on the implementation of part-time and short-cycle studies in medical and health care education. The research was carried out at the Faculty of Medicine, University of Zenica, and the Faculty of Medicine, University of East Sarajevo. The Faculty of Medicine in Zenica organized programs in *Child and Adolescent Psychotherapy* and *Occupational Therapy*, while the Faculty of Medicine in East Sarajevo implemented short-cycle programs titled *Dental Implants: From Basic to Advanced* and *Instrumentation in Surgical Practice*. Short-cycle programs have only recently been introduced into the legislative framework of higher education in Bosnia and Herzegovina. However, the distinction between *micro-credentials* and *short-cycle education* is still not

clearly recognized, particularly regarding credit transfer and student benefits. According to the conducted survey, short-cycle programs should range between 375 and 1,800 teaching hours, which is often too extensive for developments in medical and health care fields. Therefore, the development of micro-credentials is essential for improving educational flexibility and enhancing student employability. The survey results showed that 52.3% of respondents supported the inclusion of short-cycle and micro-credential programs in higher education, primarily for specialized occupations (80.9%; n = 678). Open-ended responses emphasized that while accelerated programs may risk superficiality and excessive specialization, they also promote efficiency and targeted skill acquisition. The main advantages of short-cycle education include flexibility, integration of theory and practice, and the opportunity for students to apply theoretical knowledge in real-world settings, leading to greater motivation and engagement. On the other hand, challenges include high time demands and limited integration within standard curricula. Results from the four implemented programs in Zenica and East Sarajevo indicate overall satisfaction among both students and instructors. Nonetheless, further improvement is needed in terms of curricular recognition and legislative acceptance.

Keywords: Health Care; Medical Education; Micro-Credentials; Short-Cycle Education

Session C16. SKILLS4LIFE: EMPOWERING HEALTHCARE PROFESSIONALS WITH SKILLS FOR SUCCESS IN THE WORKPLACE

SUCCESSFUL PUBLIC PERFORMANCE FOR A SUCCESSFUL CAREER

Gabrijela Kišiček

University of Zagreb, Faculty of Humanities and Social Sciences, Department of Phonetics, Zagreb, Croatia

Corresponding author: gkisicek@ffzg.unizg.hr

Public speaking skills are essential for almost every profession in today's world. From classical antiquity onwards, the principle articulated by the Roman rhetorician Quintilian remains valid: *the better you speak, the more willing people are to listen to you, and the easier it becomes for them to trust you.* Those who master the art of public performance gain more trust, exert greater persuasive power, and are perceived as more competent and determined. The medical profession is no exception – on the contrary, it is a field in which competence, expertise, and confidence are indispensable for building a strong professional image. Effective public speaking contributes significantly to this perception. Naturally, eloquence cannot replace medical knowledge and experience. However, it can enhance the way expertise is communicated and strengthen the impression of authority, reliability, and care. Public speaking is not an innate gift but a skill that can be learned, practiced, and refined. It enriches professional education by enabling practitioners to share their knowledge, demonstrate competence, and engage effectively with colleagues, co-workers, and the wider public. As Cicero observed, *knowledge without eloquence is useless, while eloquence without knowledge is dangerous.* By integrating public speaking into professional development, we can ensure that those with valuable knowledge become more influential and impactful – not only within their professions but also in their communities and societies.

Keywords: Audience; Public Speaking; Eloquence

TEACHING WHAT AI CANNOT: USING APPLIED IMPROVISATION TO ENHANCE RELATIONSHIP-CENTERED COMMUNICATION AND FEEDBACK

Brendan Freeman, Abbas Husain, Jordan Valentin

Staten Island University Hospital – Northwell Health, Department of Emergency Medicine, Staten Island, NY, United States of America

Corresponding author: brendanfreeman41@gmail.com

Aim: To explore the current state of relationship-centered communication (RCC) and feedback delivery in emergency medicine, contrast it with an ideal future state, and demonstrate how applied improvisation can bridge the gap by teaching communication skills that remain uniquely human and cannot be replicated by artificial intelligence. This work highlights the urgency of reinforcing empathy, emotional attunement, and psychological safety amid increasing digital documentation demands and time pressure.

Materials and Methods: We developed a three-session curriculum integrating improvisational theater techniques with RCC principles and structured feedback models (SFED, ATA, R2C2), guided by Kern's six-step curriculum design framework. The lecture positions this curriculum as a case study for rehumanizing communication training. Each session combined short didactic segments, facilitator-modeled scenes, and breakout improv exercises emphasizing "Yes, and" skills, active listening, gift-giving, and collaboration. Debriefs explicitly linked improv principles to RCC microskills (e.g., empathy, open-ended questions, teach-back) and feedback structures, allowing participants to practice skills in a psychologically safe environment and reflect on their application in clinical teaching. Participants completed post-session 5-point Likert ratings and open-ended reflections. Thematic analysis was performed on qualitative responses.

Results: Fifty-two learners (medical students, interns, residents) participated. Likert ratings were highly positive for structure (96.1%), engagement (100%), relevance (92.3%), and facilitator skill (88.5%). Thematic analysis revealed four key themes: (1) enjoyment and engagement, (2) connection to patient care, (3) application of improv to feedback and communication, and (4) openness to future use. Representative comments included: "The Red Ball activity was simple but highlighted important points about communication breakdowns" and "I'll use 'Yes, and' to make feedback more open and collaborative." Participants expressed a shift toward more deliberate, empathic, and structured communication practices and recognized the importance of preserving these human elements in an era of digitalization and AI integration.

Conclusion: The results suggest that this approach may help sustain relational skills despite technological pressures. Future studies should explore objective behavioral outcomes and the longitudinal impact of repeated improv exposure**.**

Keywords: Artificial Intelligence; Communication; Emergency Medicine; Empathy; Feedback; Professional-Patient Relations

WORKSHOP
MASTERING PUBLIC SPEAKING SKILLS WORKSHOP

Gabrijela Kišiček

University of Zagreb, Faculty of Humanities and Social Sciences, Department of Phonetics, Zagreb, Croatia

Corresponding author: gkisicek@ffzg.unizg.hr

This workshop is designed to equip medical professionals with the essential skills for effective public communication, whether in patient consultations, interdisciplinary team meetings, or professional conferences. Participants will learn to deliver clear, confident, and engaging presentations, using body language, structured content, and a fluent, professional speaking style.

Following the principle of *"learn and apply"*, the workshop combines practical exercises with targeted feedback. Participants will have the opportunity to practice real-life scenarios, receive constructive guidance, and identify both strengths and areas for improvement in their public performance.

The program will cover:

- Impromptu speaking: strategies for communicating confidently without prior preparation, useful for unexpected questions from patients, colleagues, or conference audiences;

- Nonverbal communication: mastering gestures, posture, and facial expressions to convey confidence, empathy, and professionalism;
- Assertiveness and audience engagement: techniques to maintain authority, capture attention, and foster trust in both patient interactions and professional presentations;
- Logical and coherent presentation: structuring information so that complex medical concepts are accessible and memorable for colleagues, patients, or public audiences.

Additionally, participants will learn practical voice-strengthening exercises and techniques to improve diction and pronunciation, ensuring their speech is clear, precise, and professional.

For each aspect of successful public performance, participants will receive guidance, practice exercises, and individualized feedback. By the end of the workshop, medical professionals will be better prepared to communicate their expertise effectively, inspire trust, and make a lasting impact in clinical, academic, and public settings.

Keywords: Body Language; Presentations; Public Speaking; Speech Structure

Session C17.
EARLY INTEGRATION OF CLINICAL CONTENTS TO PRECLINICAL COURSES

TRANSFORMATION OF PRECLINICAL EDUCATION THROUGH EARLY CLINICAL INTEGRATION: AN INNOVATIVE APPROACH TO TEACHING PATHOPHYSIOLOGY

Josipa Josipović[1,2]

[1] Sestre milosrdnice UHC, Department of Nephrology and Hypertension, Zagreb, Croatia
[2] Catholic University of Croatia, School of Medicine, Zagreb, Croatia

Corresponding author: josipa.josipovic01@gmail.com

Pathophysiology represents the critical interface between basic sciences and clinical medicine. Traditional preclinical education often lacks clinical context, leading to fragmented learning and limited understanding of disease mechanisms. Recent educational evidence strongly supports early clinical exposure and the active involvement of clinicians in preclinical teaching as key factors that enhance learning motivation, conceptual integration, and professional identity formation. Pathophysiology, taught in the second year of study, provides an ideal platform for this integration by linking fundamental biological mechanisms with clinical reasoning. The objective is to present an innovative educational model in which clinicians actively participate in teaching pathophysiology and gradually continue this integrative role across subsequent courses – from medical propedeutics to internal medicine – thereby promoting continuous and clinically contextualized learning from the earliest stages of medical education. Description: In this model, clinical specialists are incorporated into the teaching of pathophysiology through case-based discussions, demonstration of diagnostic reasoning, and joint teaching sessions with basic science faculty. By engaging the same clinicians who later teach in courses such as medical propedeutics and internal medicine, this model ensures curricular coherence and continuity. Educators familiar with foundational concepts can effectively bridge theoretical knowledge with clinical practice and support the development of integrated clinical reasoning. This approach builds progressive vertical integration throughout the curriculum, aligning with the three-tiered structure of basic, advanced, and clinical pathophysiology. Early clinical integration within pathophysiology teaching, supported by collaboration between clinicians and basic science educators, enhances knowledge transfer, promotes clinical reasoning, and fosters a cohesive understanding of disease mechanisms. The participation of the same clinicians across preclinical and clinical courses strengthens continuity in learning and reinforces students' ability to connect foundational knowledge with patient care. This model aligns with global trends in competency-based and integrated medical education and represents a sustainable framework for bridging the preclinical–clinical divide.

Keywords: Case-Based Learning; Clinician Involvement; Early Clinical Integration; Medical Education Reform; Pathophysiology; Vertical Integration

FROM BEDSIDE TO SCHOOL BENCH: THE ROLE OF CLINICAL DATA IN UNDERSTANDING BASIC HUMAN BIOLOGY

Felix M. Wensveen

University of Rijeka, Faculty of Medicine, Department of Histology and Embryology, Rijeka, Croatia

Corresponding author: Felix.Wensveen@uniri.hr

Education provides the essential foundation that enables students to apply their knowledge in their future professions. In medicine, this foundation lies in a thorough understanding of human biology, which is crucial for recognizing and treating disease. Yet, particularly in horizontally structured curricula, the link between biological principles and the clinical practice taught in later years can be lost. In this lecture, I will outline strategies for integrating clinical knowledge into traditional pre-clinical education to help students appreciate the relevance of basic biology. I will also highlight translational scientific approaches that can bridge the gap between clinical practice and pre-clinical learning. Using examples, I will show how clinical observations often inspire research questions that must first be explored in fundamental biological models before they can lead to new treatment opportunities.

The aim of this lecture is to underscore the importance of integrating both biology and clinical data to ensure the comprehensive education of the next generation of physicians.

Keywords: Biology; Clinical Competence; Medical undergraduate education; Translational Medical Research

SWISS EXAMPLES OF BRIDGING PRECLINICAL AND CLINICAL STUDIES

Ivan Božić

ŽSB Insula, Rab, Croatia

Corresponding author: ivanbozic92@gmail.com

In this presentation, a few examples of how the university of Bern in Switzerland introduces medical students to clinical environments during their preclinical stage in the first three years of their studies will be shown.

Keywords: Clinical Skills; Medical Education; Preclinical Studies

RETENTION OF BASIC SCIENCES KNOWLEDGE IN THE CLINICAL YEARS: THE ROLE OF AN INTEGRATED CURRICULUM IN LIFELONG LEARNING

Elvira Lazić Mosler[1], Josip Dujmović[2], Darko Hren[3]

[1] Catholic University of Croatia, School of Medicine, Zagreb, Croatia
[2] Private Psychiatric Practice Dr Josip Dujmovic, Dublin, Ireland
[3] University of Split Faculty of Humanities and Social Sciences, Split Croatia

Corresponding author: elvira.lazic@unicath.hr

Aim: The portion of knowledge retained by the students seems to be the central question for medical education. The aim of this research was to explore the association between the knowledge of basic (physiology and biochemistry) and clinical sciences (internal medicine) among medical students and determine the level of retained basic science knowledge at the fifth year of medical studies.

Materials and Methods: Medical students attending the second (n = 145, response rate 60%) or the fifth year (n = 176, response rate 73%) of medical studies at the Zagreb University School of Medicine in Croatia were given an anonymous knowledge test with 15 pairs of questions developed specifically for this purpose. Each pair consisted of a basic and clinical question, with the correct answer to the basic question explaining the physiological or biochemical background of the clinical question. Three pairs of questions were excluded from the analysis due to poor psychometric characteristics

Results: We found statistically significant correlation between basic and clinical tests scores for both groups of students (r = 0.47, P<0.001 for the second year and r = 0.45, P<0.001 for the fifth year). 2 × 2 within between measures ANOVA revealed a significant interaction effect for knowledge test and study year (Wilks λ = 0.55, F1, 319 = 262.7, P<0.001; effect size = 0.45), showing that fifth year students scored lower on the basic test than second year students but obtained higher scores on the clinical test.

Conclusion: Core basic science knowledge is often lost during the clinical years of medical studies. While recalling basic science concepts may not directly influence clinical knowledge, our study shows a positive correlation between retained basic science understanding and clinical performance. This highlights the importance of discussing and optimizing methods and programs for learning medicine. At the Catholic University of Croatia School of Medicine, the curriculum follows a spiral integration model, combining horizontal and vertical integration to ensure coherent, progressive learning. Horizontal integration links basic science disciplines within organ-system modules, while vertical integration connects basic and clinical sciences across all years, enabling early clinical exposure and continuous application of theoretical knowledge. Revisiting core concepts at increasing levels of complexity promotes long-term knowledge retention, clinical reasoning, and the integration of scientific principles into practice. Continuous evaluation and coordination among departments ensure consistency, prevent redundancy, and support the program's educational outcomes.

Keywords: Curriculum; Medical Education; Psychology; Retention; Trends; Undergraduates

CAN UNDERGRADUATE STUDENTS HELP GRADUATE STUDENTS AND VICE VERSA IN OVERCOMING THE CURRENT GAP THAT EXISTS AT THE END OF MEDICAL STUDIES?

Dragan Trivanovic[1-3]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] Juraj Dobrila University of Pula, Faculty of Medicine, Pula, Croatia
[3] General Hospital Pula, Pula, Croatia

Corresponding author: dragan.trivanovic@uniri.hr

There is a gap between pre-clinicians (researchers) and clinicians. Researchers in laboratories use modern methods of molecular biology, biochemistry and immunology, not understanding the importance of the results for the patient, and clinicians process the obtained data according to their guidelines, without any feedback on the improvement or change of research and development of further methods due to lack of knowledge of the process of laboratory and research work. Building a competency-based medical education emphasizes the mutual cooperation of medicine and multidisciplinarity. Molecular biology and genetics are indispensable parts of the knowledge structure for medical students. The problem is more difficult to solve by changing the current competence and knowledge of researchers and clinicians in practice, therefore, the focus should be on future generations of students in scientific and professional fields (laboratory courses, molecular biology, biochemistry, nursing, etc.). Early clinical and early laboratory exposure is a teaching and learning methodology that encourages medical students to be exposed to patients from the first year of medical school. Early education sessions motivate medical students in various ways, strengthening their academic strength, improving clinical skills, improving communication skills and making them more confident. In this lecture, we will present the activities that we plan to implement through regular study activities as well as project activities in approaching the goal. The intention is to test patients with malignant diseases by providing the necessary diagnostic equipment, and to include each project participant as a collaborator, observer or main participant in the process of getting to know the patient, taking a biological sample, pre-analytical work in the laboratory, obtaining test results, analyzing the significance of the obtained result at an up-to-date level, in the work of the multidisciplinary team of the hospital for cancer treatment and the procedures for making recommendations for further treatment based on detected mutations or other changes. Aims are to master laboratory diagnostic methods by applying already acquired and new knowledge and skills by employees of the University; to connect participants in research and laboratories with clinicians for the benefit of the patient; to increase the clinical impact of the diagnostic-laboratory system; to provide feedback to non-clinicians in order to improve their development; to demystify the translational research continuum regardless of the level of knowledge; to acquire new knowledge from preclinical and clinical work in patients with malignant diseases, and each participant will complete the translational path from the test

tube to the decision on the treatment of cancer and be able to choose how to propose therapeutic plans to the patient. The contribution of the project is the translation of the research and laboratory processes of the University and Hospital into the synergy of diagnostics and treatment plans while reducing the gap between laboratory, diagnostic and research work and the treatment of patients with malignant

Keywords: Interprofessional Education; Knowledge management; Premedical Education

ENGAGING MEDICAL STUDENTS IN CLINICAL RESEARCH IN SURGERY: BRIDGING EDUCATION, INQUIRY, AND PATIEN-CENTERED PRACTICE

Samo K. Fokter[1,2]

[1] University of Maribor, Faculty of Medicine, Maribor, Slovenia
[2] University Medical Centre Maribor, Clinical Department of Orthopaedics, Maribor, Slovenia

Corresponding author: samo.fokter@ukc-mb.si

The aim of this presentation is to illustrate how undergraduate medical students can be successfully engaged in clinical research in surgery and to demonstrate how such initiatives enhance both their educational experience and the broader mission of patient-centered academic medicine. In the transformative era of higher education, early integration of clinical content into preclinical curricula represents a key opportunity to foster curiosity, critical thinking, and research competencies in future physicians. By participating in authentic surgical research projects, students are exposed to real clinical problems that deepen their understanding of preclinical subjects while simultaneously developing methodological skills such as data collection, statistical analysis, and evidence-based reasoning. Our institutional experience shows that early involvement in surgical research strengthens professional identity formation, encourages collaboration within academic teams, and promotes ethical awareness, thereby narrowing the traditional gap between theoretical learning and clinical practice. Moreover, student-led contributions to research stimulate innovation, improve motivation for lifelong learning, and cultivate resilience in facing the challenges of modern healthcare systems. The presentation will share examples of how structured mentorship, integration into ongoing surgical studies, and support from academic and clinical staff have enabled undergraduates to produce meaningful scientific outputs while gaining valuable competencies for their future careers. Ultimately, engaging medical students in clinical research at an early stage does not only benefit their personal and professional growth, but also advances the transformative agenda of higher education by aligning surgical education with inquiry-driven, collaborative, and patient-centered practice.

Keywords: Curriculum; Medical Students; Patient-Centered Care; Research; Surgical Procedures; Undergraduate Medical Education

Session C18.
SATELLITE SYMPOSIUM: HEALTH LITERACY EDUCATION

HEALTH LITERACY: A FUNDAMENTAL COMPETENCY IN COMMUNICATION WITH PATIENTS

Božidar Vujičić

University of Rijeka, Faculty of Medicine, Department of Internal Medicine, Rijeka, Croatia

Corresponding author: vujicic.bozidar@gmail.com

Health literacy represents a crucial yet often underestimated determinant of effective healthcare delivery and patient outcomes. Defined as the ability of individuals to obtain, understand, and use health information for informed decision-making, health literacy forms the foundation of patient-centred communication and shared

decision processes. Low levels of health literacy are strongly associated with poorer health outcomes, reduced adherence to therapy, increased hospitalisation rates, and higher healthcare costs. Conversely, enhancing health literacy improves patients' self-management capacities, strengthens trust between patients and healthcare professionals, and promotes equity in access to care. In modern health systems characterised by complexity, digitalisation, and growing multimorbidity, communication competence among healthcare providers becomes indispensable. This presentation aims to highlight the pivotal role of health literacy as a professional competency and to present practical strategies for integrating health literacy principles into daily clinical communication. It will also emphasise educational approaches and institutional frameworks that support the development of a health-literate culture within healthcare organisations. Developing health literacy-sensitive communication requires a multidisciplinary approach that integrates medical education, public health, and social sciences. Training programs should emphasise plain language, cultural competence, and the use of teach-back methods and visual aids to ensure comprehension. Institutional strategies – such as creating "health-literate organisations" – enable the alignment of communication practices with patients' literacy levels. Furthermore, the digital transformation of healthcare highlights the importance of eHealth literacy, which encompasses the ability to navigate, evaluate, and apply digital health information safely and effectively. Policymakers and healthcare leaders must recognise health literacy as a systemic quality indicator and embed it within national health strategies. Improving health literacy is not merely a patient's responsibility, but a shared societal obligation that requires coordinated efforts across the health sector, education, and community networks. Strengthening communication competencies and fostering an environment where information is accessible, comprehensible, and actionable will lead to safer, more equitable, and more effective healthcare delivery.

Keywords: Communication; Health Education; Health Equity; Health Literacy; Health Personnel; Patient-Centered Care

HEALTH LITERACY AS A FOUNDATION FOR HEALTH EQUITY: BRIDGING GAPS IN ACCESS AND UNDERSTANDING

Svjetlana Gašparović Babić[1,2]

[1] Teaching Institute of Public Health of Primorsko-goranska County, Department of Public Health, Rijeka, Croatia
[2] University of Rijeka, Faculty of Health Studies, Department of Public Health, Rijeka, Croatia

Corresponding author: svjetlana.gasparovic-babic@zzjzpgz.hr

Health literacy is a critical determinant of individual and population health. It encompasses the cognitive and social skills necessary to access, comprehend, assess, and apply health information to make informed decisions regarding individual health. It also covers the abilities required for preserving and promoting health, managing diseases appropriately, and using healthcare services effectively. Low levels of health literacy are strongly associated with health disparities, reduced use of preventive services, poorer disease management, and increased hospitalizations. This lecture aims to highlight health literacy as a fundamental key factor for achieving health equity, focusing on its role in empowering individuals and communities, reducing social health inequalities, and enhancing the effectiveness of health systems. The presentation will review dimensions of health literacy, explore the current evidence on its distribution and impact across different sociodemographic groups, and examine strategies for improving health literacy through intersectoral collaboration, education, and digital tools. Particular attention will be given to vulnerable populations and barriers they face in accessing, understanding, and using health information. Effective approaches to strengthening health literacy include integrating it into school curricula, providing community-based and workplace education, training health professionals in clear communication, and developing user-friendly digital resources. Public health, as a discipline, plays a pivotal role in advancing health literacy at the population level, thereby influencing health outcomes and promoting equity. This priority has also been recognized globally, with organizations such as the World Health Organization and the European Union emphasizing health literacy as a cornerstone of sustainable health systems and health equity policies. Furthermore, communication skills among healthcare professionals are of equal importance to clinical skills, as effective communication has been shown to significantly impact health outcomes. It is also important to address the responsibility of health professionals and institutions in recognizing and responding to varying health literacy levels among patients and the public. By promoting health literacy, we not only improve individual outcomes but also strengthen public health resilience and social justice.

Keywords: Health Equity; Health Literacy; Patient Education; Public Health; Social Determinants of Health

TEACHING HEALTH LITERACY AS A CLINICAL SKILL: PREPARING FUTURE HEALTHCARE PROFESSIONALS FOR PATIENT-CENTRED PRACTICE

Katarina Fehir Šola[1,2]

[1] Pharmacy Bjelovar, Bjelovar, Croatia
[2] University Josip Juraj Strossmayer Osijek, Faculty of Medicine, Department of Laboratory Medicine and Pharmacy, Croatia

Corresponding author: kfsola@gmail.com

Aim: Health literacy (HL) is an essential clinical component of health outcomes, directly affecting patient safety and adherence. Pharmacists are well positioned to improve health literacy trough patient education and counselling. This pilot study aimed to explore HL as a fundamental clinical competency in pharmacy education and to assess the level of awareness, attitudes, and perceived responsibility regarding HL among undergraduate pharmacy students.

Materials and Methods: A cross-sectional study was conducted with 70 students from the University of Josip Juraj Strossmayer in Osijek, Study of Pharmacy. These students were in their first (n = 37), second (n = 14), and third (n = 19) years of study. Participants completed a 14-item questionnaire that used a 5-point Likert scale to measuring students' understanding of HL, confidence in information appraisal and perceived professional responsibility. The data were analysed descriptively and via principal component analysis (PCA), employing parallel analysis and Varimax rotation to investigate underlying components.

Results: The average self-reported ability to understand healthcare instructions was high (M=4.43), but the average confidence in judging online health information was only moderate (M=3.40). Students found it somewhat challenging to understand medicine leaflets (M=2.37), but they strongly agreed that pictograms and brief messages help patients understand (M=4.21). Most students acknowledged health literacy (HL) as a crucial component of clinical practice (M = 4.81) and recognised their professional obligation in patient education (M = 4.61). PCA identified one main component, Health Literacy Orientation, which explained 25.6% of the total variance and showed general HL awareness and competence. Exploratory two- and three-component models indicated subdomains related to Functional–Critical Health Literacy Skills and Professional Responsibility towards Health Literacy, collectively accounting for 46% of the variance.

Conclusion: Pharmacy students demonstrated a strong awareness of HL and recognise its importance for patient-centred care. These findings highlight both the practical and ethical dimensions of HL, in consistent with modern educational paradigms emphasizing communication, digital health literacy, and interprofessional learning. This aligns with international perspectives positioning HL as individual and organisational responsibility. The tool provides a foundation for integrating HL into pharmacy programs designed to enhance communication, ensure safe medication use, and improve public health outcomes.

Keywords: Curriculum Development; Health Literacy; Patient-Centred Care; Pharmacy Education; Professional Competence

DIGITAL HEALTH LITERACY IN THE INFORMATION AGE: OPPORTUNITIES AND CHALLENGES

Tamara Turk Wensveen[1,2]

[1] Specialized Hospital for Medical Rehabilitation of Cardiac, Pulmonary and Rheumatic Diseases, Thalassotherapia Opatija, Center for Diabetes, Endocrinology and Cardiometabolism, Opatija, Croatia
[2] Clinical Hospital Centre Rijeka, Department of Endocrinology, Diabetes and Metabolic Diseases, Rijeka, Croatia

Corresponding author: Tamara.Turk.Wensveen@uniri.hr

In recent decades, societal complexity has increased dramatically. With the advent of the digital age, access to information has become virtually unlimited, especially in the field of medicine. Yet the ability of individuals to critically evaluate, process, and apply this abundance of information has not advanced at the same pace. Consequently, one of the central challenges for modern physicians is not merely to deliver medical information, but to communicate it in a way that patients can understand, internalize, and use meaningfully. This concept, known as *health literacy*, is fundamental for building trust in the physician–patient relationship, fostering comprehension

of medical conditions, and ensuring adherence to therapy. In this lecture, I will provide an overview of the challenges and opportunities associated with promoting health literacy, particularly in the digital era. Drawing on examples from my clinical practice in metabolic disease, I will highlight practical strategies for improving patient engagement and comprehension. Finally, I will highlight how integrating health literacy into the education of both medical students and patients is cornerstone of effective healthcare.

Keywords: Communication; Health Literacy; Medical Education; Physician-Patient Relations

EDUCATIONAL NEEDS ON SELF-MEDICATION DURING HEALTHCARE STUDIES – INSIGHTS AND IMPLICATIONS FROM OVERIVEW OF HEALTHCARE PROFESSIONALS' AND STUDENTS' BEHAVIORS

Vedrana Aljinović-Vučić[1,2], Jasenka Mršić-Pelčić[1]

[1] University of Rijeka, Faculty of Medicine, Department of Basic and Clinical Pharmacology and Toxicology, Rijeka, Croatia
[2] Jadran Galenski Laboratorij d. d., Medical Affairs Department, Rijeka, Croatia

Corresponding author: vedrana.aljinovic@gmail.com

The assessment of current evidence on self-medication among healthcare professionals (HCPs) and healthcare students was performed with the aim to identify educational needs that should be addressed during university training. A narrative review of international literature was conducted, focusing on the prevalence, patterns, and risks of self-medication among HCPs and students. Special attention was given to studies reporting antibiotic and psychotropic drug use, and to publications discussing educational interventions targeting responsible self-medication. Evidence indicates alarmingly high prevalence rates: over 90% of respondents in some studies reported practicing self-medication in general, and more than 50% reported antibiotic self-medication. Such practices carry significant risks, including masking of symptoms, drug interactions, delayed diagnosis, and contribution to antimicrobial resistance. Despite these risks, most healthcare curricula do not provide systematic education on self-medication. This literature review highlights key educational needs: raising awareness of risks and benefits; improving recognition of underlying patient self-medication; strengthening counselling on safe drug use; developing skills for medication management, including deprescribing when necessary; and ensuring effective communication with patients. Self-medication is highly prevalent among HCPs and healthcare students, yet formal education on this issue remains limited and non-standardized. Introducing structured training on responsible self-medication early in medical, pharmacy, dental, and nursing programs could improve the knowledge, attitudes, and practices of future professionals. This would promote safer self-care, enhance patient safety, and support more sustainable healthcare systems.

Keywords: Drugs; Education; Healthcare Professionals; Patient Safety; Self-Medication

ANALYZING PATIENT EDUCATION IN CROATIA AND AMERICA

Neva Crnković Hahn[1-3], Zora Crnković Hahn[1-2,4]

[1] University of Zagreb School of Medicine, Medical Studies in English, Zagreb, Croatia
[2] University Hospital Center Zagreb, Zagreb, Croatia
[3] Harborview Medical Center, Department of Neurosurgery, Seattle, United States of America
[4] Hospital for Special Surgery, Spine Surgery Department, New York City, United States of America

Corresponding author: nevnevh@gmail.com

Patient education is broadly accepted as a necessary tool to improve health outcomes, self-management, and medication adherence. However, there are still issues surrounding the practice of patient education, and further research is needed on verbal versus written education, and on how to tailor education to a patient's specific literacy and cultural context.[1,2] By analyzing hospitals in the United States of America and in Croatia, this review and presentation aims to illustrate and compare patient education in two different healthcare systems, outline benefits and shortcomings of each system, and clarify further research opportunities. This will be accomplished through the examination of case reports from the Hospital for Special Surgery (HSS) in New York City, Harborview Medical

Center in Seattle, and the Hospital of Obstetrics and Gynecology in Zagreb. These three institutions all provide expert care to their communities while aiming to adequately inform patients of their ailments. Some common strengths of patient education noted in each of these three institutions include: physicians clearly explaining procedures and recovery in advance, and a strong willingness to listen to patients. To mention just a few shortcomings: in the New York City HSS Spine Surgery Department, the core issue blocking adequate patient education was the short appointment time. The Neurosurgery Clinic at Harborview's main problem in patient education was the speed at which surgeons explained different pathologies and the challenging professional verbiage used. Furthermore, patients would occasionally hear contradictory statements from fellow and attending surgeons. In the Hospital of Obstetrics and Gynecology in Zagreb, hospital personnel expressed different priorities, which could lead to patients feeling inundated and confused. These three hospitals, in two different countries with two different healthcare systems, share similar problems in patient education. The key issues are that (1) patients may receive information from many different healthcare providers, who (2) tend to overwhelm patients with information, and who (3) sometimes use technical terminology, confusing many patients. Future research should assess which forms of communication lead to the best patient understanding, identify a streamlined approach so patients receive information from 1-2 key stakeholders, and train medical personnel to speak colloquially with all patients.

Keywords: Delivery Of Health Care; Education; Hospitals; Literacy; Patients

PATIENT EDUCATION PATHWAYS IN LIVER TRANSPLANTATION: IMPLEMENTATION EXPERIENCE AT UNIVERSITY HOSPITAL CENTRE ZAGREB

Antonija Šimunković[1], Vlatka Rafaj[2], Branka Jukić[2], Irena Škondro[2], Sanja Križanić[2], Anđela Begonja[2], Emilija Katarina Lozo[2], Doris Čuržik[1], Iva Košuta[2,3], Viktor Domislović[2], Vibor Šeša[2], Maja Sremac[2], Tihomir Bradić[2], Ana Ostojić[2], Robert Baronica[2], Tina Tomić Mahečić[2], Vanja Slilić[2], Ivona Hanžek[2], Karolina Režek[2], Loredana Divjak[2], Martina Čalušić[2], Iva Martina Srajher[2], Igor Petrović[2,3], Hrvoje Silovski[2,3], Jurica Žedelj[2], Ivan Romić[2], Ognjan Deban[2], Tomislav Baotić[2], Tomislav Bubalo[2], Ivan Štironja[2], Goran Pavlek[2], Anna Mrzljak[1,2,3]

[1] Croatian Rare Liver Foundation, Samobor, Croatia
[2] University Hospital Centre Zagreb, Liver Transplant Centre, Zagreb, Croatia
[3] University of Zagreb School of Medicine, Zagreb, Croatia

Corresponding author: anna.mrzljak@gmail.com

Aim: The aim of this project was to design, implement, and evaluate a comprehensive patient education pathway in liver transplantation (LT) that would improve patients' understanding of the transplant process, enhance adherence to therapy, and strengthen psychosocial readiness for surgery and recovery.

Materials and Methods: A multidisciplinary team at the University Hospital Centre Zagreb, including hepatologists, transplant surgeons, anesthesiologists, nurses, and pharmacists, collaborated with the Croatian Rare Liver Foundation to develop an educational booklet titled "Liver Transplantation - A Guide for Patients and Family Members" (2025). The content was created through an iterative process involving patient and family members interviews, expert input, and analysis of common informational gaps identified in clinical practice. The booklet provided step-by-step explanations of the transplant journey; from pre-transplant evaluation and surgical preparation to postoperative recovery and long-term self-management and it is supported by practical advice, lifestyle recommendations, and psychological coping strategies. Educational materials were distributed to patients and family members and integrated into structured consultations during evaluation and follow-up.

Results: Preliminary evaluation, based on clinician feedback, revealed that patients exposed to the educational pathway reported greater understanding of medical procedures, increased confidence in managing medication regimens, and reduced anxiety while waiting for LT. Family members expressed higher levels of preparedness and involvement in postoperative care, while healthcare professionals observed improved communication, adherence, and patient engagement.

Conclusions: The implementation of a patient-centred educational pathway enhanced health literacy, safety, and psychological resilience among LT recipients and their families. The UHC Zagreb model demonstrates that multidisciplinary, patient-centred education, co-created with patients and families, can improve outcomes and should be integrated as a formal component of medical education and transplant care training programmes.

Keywords: Health Literacy; Liver Transplantation; Multidisciplinary Team; Patient Education; Postoperative Care

THE INDIVIDUAL AS A MANAGER OF THEIR OWN HEALTH: PUBLIC HEALTH CAMPAIGNS, ACTIONS, PRIORITIES AND PROGRAMS IN THE SERVICE OF HEALTH EDUCATION

Iva Sorta-Bilajac Turina[1,2], Svjetlana Gašparović Babić[1,3], Nevenka Vlah[1], Sandro Kresina[4], Helena Glibotić Kresina[1,3]

[1] Teaching Institute of Public Health of the Primorje - Gorski Kotar County, Department of Public Health, Rijeka, Croatia
[2] University of Rijeka Faculty of Medicine, Department of Environmental Medicine, Rijeka, Croatia
[3] University of Rijeka Faculty of Health Studies, Department of Public Health, Rijeka, Croatia
[4] Teaching Institute of Public Health of the Primorje - Gorski Kotar County, Department of School and Adolescent Medicine, Rijeka, Croatia

Corresponding author: iva.sorta-bilajac@zzjzpgz.hr

Reflecting on medical education from the perspectives of both students and teachers, and on their mutual interactions, it becomes evident that the ultimate goal of the educational process is to achieve effective communication with patients – for "first comes the word, then the medicine". When considering this, it is essential to recognize the differences between clinical and non-clinical settings. One of the most notable distinctions between public health and clinical practice is the shift from the traditional "one-on-one" relationship, which still dominates throughout medical education, toward a "one-to-many" approach characteristic of public health. In this context, the patient is the entire population, and the workplace of a public health specialist – as Andrija Štampar emphasized – is "where people live, not in the office." Physicians should therefore act as "teachers of the people", "preparing communities for a proper understanding of health issues". By analysing Štampar's ten public health postulates from the perspective of modern public health medicine, it becomes clear that they remain timeless and highly applicable today. These postulates are illustrated through practical examples of recognizable public health campaigns, actions, priorities, and programs, with a particular emphasis on those identified in the Plan for Health of Primorje-Gorski Kotar County within the "Healthy County" project, as well as recent media-based public health campaigns. Special attention is given to the social media presence of the Teaching Institute of Public Health of the Primorje-Gorski Kotar County and the importance of translating medical information into a language understandable to the general public. All examples share a common denominator – the promotion of health and education of citizens about the importance of disease prevention. Every individual should possess an adequate level of health literacy to become the best manager of their own health, while students, healthcare professionals, and educators alike should serve as true ambassadors of health.

Keywords: Education; Health Literacy; Health Promotion; Prevention; Public Health

WORKSHOP
THE ART OF UNDERSTANDING: EXPLORING COMMUNICATION AND LITERACY IN PRIMARY CARE

Ida Štimac[1], Rene Peloza[1], Mihaela Marinović Glavić[2], Lovorka Bilajac[2,3]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] University of Rijeka, Faulty of Medicine, Department of Social Medicine and Epidemiology, Rijeka, Croatia
[3] Teaching Institute of Public Health Primorje – Gorski Kotar County, Rijeka, Croatia

Corresponding author: ida.stimac@gmail.com

The Student Section for Public Health focuses on promoting health and empowering individuals through public health actions and initiatives**.** One of its key missions is to assess and promote health literacy, defined as ability of individual to gain access to, understand and use information in ways which promote and maintain good health. It is not only personal competence: higher levels of health literacy has beneficial effect on social, economic and environmental determinants of health for the entire population. The results show that the average level of health literacy in Croatia is on the borderline between problematic and adequate. This highlights the importance of comprehensive communication between physicians and patients to ensure optimal healthcare outcomes. The workshop focuses on strengthening mutual understanding and communication between physicians and patients. According to best-practice guidelines, the main objective is to apply the "teach-back" method, a communication technique used to confirm that patients truly understand the information provided. The workshop will include several structured scenarios, representing different clinical situations: chronic disease

management, medication adherence, and lifestyle modification. Through these simulated cases, participants will engage in practical exercises that reflect real-world situations, highlighting common challenges in physician–patient communication. Each scenario will encourage participants to identify bounderies to effective dialogue and explore strategies to overcoming them. During the workshop participants will gain experience in how structured conversation and good preparation can improve patient adherence, strenghten patient-physician relationship and improve clinical outcomes and overall wellbeing. Emphasizing interdisciplinary collaboration, the workshop is intended for all current and future healthcare professionals involved in patient care; including physicians, students, and other healthcare workers. By fostering clear, empathetic, and tailored communication, healthcare professionals can build trust, enhance patient adherence, and contribute to better clinical outcomes and overall well-being. In addition, proficient communication and understanding of health literacy are fundamental elements of high- quality healthcare and remain central objectives within clinical practice and public health initiatives.

Keywords: Communication; Health Literacy; Public Health

Session C19.
SATELLITE SYMPOSIUM: PHARMACY EDUCATION

INTEGRATING THE CROATIAN QUALIFICATIONS FRAMEWORK INTO PHARMACY STUDIES: LESSONS LEARNED AND DIRECTIONS FORWARD

Zrinka Rajić, Cvijeta Jakobušić Brala, Jasmina Lovrić, Željan Maleš, Ana Mornar Turk, Ivan Pepić, Ivana Perković, Miranda Sertić, PharmMedQ Collaborators

University of Zagreb Faculty of Pharmacy and Biochemistry, Zagreb, Croatia

Corresponding author: zrinka.rajic@pharma.unizg.hr

The PharmMedQ project (Application of the Croatian Qualifications Framework in Improving Study Programs in Pharmacy and Medical Biochemistry) aimed to modernize pharmacy education in Croatia by applying the Croatian Qualifications Framework (CROQF) to better connect academic outcomes with labor-market needs and contemporary professional competencies. Funded by the European Social Fund and led by the University of Zagreb Faculty of Pharmacy and Biochemistry, with the University of Split School of Medicine and the Institute for the Development of Education as partners, the project was conducted during the Covid-19 pandemic (2019–2023). PharmMedQ comprised three phases: (1) development of occupational standards Pharmacist and Industrial Pharmacist, (2) development of the qualification standard Master of Pharmacy, and (3) curriculum revision. Nearly 100 experts from community and hospital pharmacies, the pharmaceutical industry, regulatory bodies, and academia collaborated to identify key professional tasks and related competencies. The resulting occupational standards Pharmacists and Industrial Pharmacists defined 15 and 11 key tasks, each supported by 13 competency sets. Based on these, the Master of Pharmacy qualification standard established 85 learning outcomes sets (41 mandatory, 44 elective), of which mandatory outcomes are required for all Croatian pharmacy programs. All standards were approved by the relevant national bodies and included in the CROQF Register. Application of the new qualification standard led to substantial modernization of the Pharmacy programme at Faculty of Pharmacy and Biochemistry. Several new mandatory courses were introduced: Digital Pharmacy, Industrial Pharmacy, Phytotherapy, Instrumental Techniques, Micronutrition, Basics of Pharmacy Management and Health Legislation. Existing key courses – Pharmaceutical Chemistry, Drug Metabolism, and Clinical Pharmacy with Pharmacotherapy – were reorganized to enhance integration and outcomes. The Pharmacy Practice course was expanded into four stages throughout the five-year program, ensuring continuous experience in community, hospital, and industrial pharmacy settings.

Keywords: Croatian Qualifications Framework; Curriculum Revision; Occupational Standards; Qualification Standard

CROATIAN PHARMACY COMPETENCY FRAMEWORK – STRUCTURED PROFESSIONAL DEVELOPMENT TAILORED TO INDIVIDUAL NEEDS

Martina Šepetavc[1,2]

[1] Farmacia Community Pharmacy Chain, Zagreb, Croatia
[2] Croatian Pharmaceutical Chamber, Zagreb, Croatia

Corresponding author: martina.sepetavc@atlanticgrupa.com

In today's healthcare system, pharmacists play an increasingly important role in safeguarding patient health and safety, which requires continuous professional development based on clearly defined competencies. The Croatian Pharmacy Competency Framework (HLJKO) was developed in response to the need for a structured, individualized approach to pharmacists' professional growth, tailored to the specific national context. It is based on the Pharmaceutical Competency Framework of the International Pharmaceutical Federation (FIP Global Competency Framework), adapted to Croatian legislative, educational, and professional standards. HLKO encompasses four core competency domains: professional knowledge and skills, management and organization, communication and collaboration, and personal development. Each domain is divided into competency clusters that allow for assessment of current competency levels and targeted development planning. The framework serves as a tool for self-assessment, mentoring, educational planning, and progress tracking, and is applicable across all career stages – from internship to advanced professional roles. Every organized educational activity accredited by the Croatian Chamber of Pharmacists must be aligned with HLJKO and clearly state the intended learning outcomes and competencies to be developed. This ensures content relevance, transparency of objectives, and responsiveness to the actual needs of the profession. Educators are encouraged to define learning outcomes according to the competency clusters, enabling precise monitoring of the impact of education on individual professional development. This approach contributes to the standardization of continuing education and facilitates the evaluation of acquired knowledge and skills. HLJKO empowers pharmacists to identify their own development needs, direct their learning activities, and actively shape their professional journey. It also provides a foundation for national quality standards, competency evaluation, and strategic workforce planning in pharmacy. The lecture will present the structure of HLJKO, its application in professional development, and opportunities for further integration into educational and professional systems. The aim is to encourage discussion on the importance of a competency-based approach in medical education, with a particular focus on the pharmacy profession.

Keywords: Competency-Based Education; Continuing Education; Pharmaceutical Services; Pharmacy Education; Professional Competence

THE EDUCATIONAL PLATFORM OF THE CROATIAN CHAMBER OF PHARMACISTS – A MECHANISM FOR THE STRUCTURED GUIDANCE OF PHARMACISTS' KNOWLEDGE DEVELOPMENT IN THE REPUBLIC OF CROATIA

Ana Soldo

Croatian Chamber of Pharmacists, Croatia

Corresponding author: ana.soldo@hljk.hr

This presentation showcases the educational platform of the Croatian Chamber of Pharmacists as a key mechanism for the structured development, guidance, and governance of pharmacists' knowledge across the Republic of Croatia. Pharmacists' continuing professional development encompasses structured education, as well as theoretical and practical training based on up-to-date professional and scientific knowledge in the fields of pharmacy and healthcare. Its goal is to maintain and enhance the competencies of licensed pharmacists in accordance with the demands of modern pharmaceutical practice. The educational platform is more than just a learning portal – it is a strategic national tool designed to support lifelong learning and competence-based education. Fully aligned with the Croatian Pharmacy Competency Framework (HLJKO), the platform facilitates systematic monitoring of individual progress and targeted development through accredited e-learning modules, webinars, and specialized content. By providing standardized and transparent access to continuing education,

the platform supports knowledge currency, ensures the applicability of learning to real-life professional contexts, and responds dynamically to public health needs and legal obligations. It promotes professional self-assessment and reflection, fosters quality assurance, and enables pharmacists to pursue personalized learning pathways. As such, the platform stands as a cornerstone of Croatia's efforts to develop a competent, adaptable, and forward-looking pharmaceutical workforce – and as a strong example of how professional chambers can lead effective knowledge management in healthcare systems.

Keywords: Croatian Chamber of Pharmacists; Croatian Pharmacy Competency Framework; Pharmacy Education

THE PHARMACIST OF THE FUTURE: EDUCATION IN THE AGE OF AI

Ana Šešelja Perišin

University of Split School of Medicine, Department of Pharmacy, Split, Croatia

Corresponding author: aperisin@mefst.hr

Artificial Intelligence (AI) is increasingly recognized as a catalyst for transforming pharmacy education, enhancing engagement, critical thinking, and readiness for technology-driven healthcare worldwide. Globally, AI supports clinical reasoning and communication through virtual simulations and case-based learning. It enhances personalized study by generating summaries and self-assessment tools while assisting students in academic and career preparation. Responsible and ethical AI use is essential, as learners must recognize bias, verify accuracy, and maintain integrity. In the United States, AI use in skills-based courses remains limited – only 18% of pharmacy schools report current application, mainly through gamification or digital simulation. Still, almost 60% of faculty plan to adopt AI within two years, reflecting growing interest despite barriers such as limited expertise, resources, and uncertainty regarding AI's specific educational role. In Europe, enthusiasm for AI is paired with structured policy and educational reform. The International Pharmaceutical Federation (FIP) reported the highest engagement in Europe, though formal AI training remains limited. The European Association of Faculties of Pharmacy (EAFP) promotes integration of digital health competencies, while the EU's AI Act emphasizes transparency and accountability in healthcare applications. Several universities illustrate practical innovation: Utrecht University (Netherlands) developed a Digital Pharmaceutical Care course addressing AI and ethics; the Complutense University of Madrid (Spain) integrates digital therapeutics into postgraduate study; RCSI (Ireland) applies telemedicine-based interprofessional learning; and Lausanne–Geneva (Switzerland) includes "expert patients" in discussions on digital ethics. Although familiarity with advanced AI tools remains uneven, both United States of America and European institutions acknowledge that future pharmacists must possess data literacy, ethical awareness, and critical evaluation skills. These competencies are essential for ensuring that AI complements – rather than replaces – human expertise in patient-centered pharmaceutical care.

Keywords: Artificial Intelligence; Clinical Competence; Curriculum; Digital Health; Ethics; Pharmacy Education

FROM MEMORIZATION TO CLINICAL REASONING: TRANSFORMING PHARMACOLOGY EDUCATION THROUGH AI AND CASE-BASED LEARNING

Kenana Ljuca[1,2]

[1] University of Tuzla, Medical faculty, Department of Pharmacology and Toxicology, Tuzla, Bosnia and Herzegovina
[2] University Medical Centre Ljubljana, Department of Gynecology and Obstetrics, Tuzla, Bosnia and Herzegovina

Corresponding author: kenana.ljuca.medf@gmail.com

The aim is to explore innovative teaching methods that move pharmacology education beyond rote memorization toward the development of clinical reasoning and safe prescribing skills, as well as to present students' perception of the integration of artificial intelligence (AI) and interactive learning tools into the Pharmacology course. Pharmacology remains one of the most conceptually challenging subjects in medical education, often

perceived by students as abstract and disconnected from clinical practice. The shift toward competency-based learning requires new approaches that promote understanding of drug mechanisms within the context of real-life therapeutic decision-making. This lecture presents a blended educational model that combines AI-supported learning platforms with case-based and problem-solving sessions designed to improve student engagement and prescribing competence. Through the use of AI-driven adaptive quizzes, virtual patient simulations, and scenario-based discussions, students can receive personalized feedback and dynamically adjust their learning paths according to performance and comprehension. These methods not only foster critical thinking and clinical application of pharmacological principles but also address the learning preferences of Generation Z students who value interactivity and immediate feedback. Preliminary feedback from student cohorts shows increased motivation, improved retention of pharmacological mechanisms, and higher confidence in clinical decision-making compared to traditional didactic teaching. The implementation of AI-assisted tools within pharmacology courses demonstrates how digital transformation can empower educators to teach safe, evidence-based prescribing while preparing future healthcare professionals for an increasingly data-driven clinical environment.

Keywords: Artificial Intelligence; Case-Based Learning; Digital Transformation; Medical Education; Pharmacology Education; Prescribing

EXPLORING THE USE AND PERCEPTIONS OF GENERATIVE ARTIFICIAL INTELLIGENCE TOOLS AMONG UNIVERSITY OF ZAGREB FACULTY OF PHARMACY AND BIOCHEMISTRY STUDENTS

Zvonimir Mlinarić[1], Dora Belec[1], Andrea Čeri[1], Emerik Galić[1], Laura Nižić Nodilo[1], Marko Žarak[1,2], Jerka Dumić[1]

[1] University of Zagreb Faculty of Pharmacy and Biochemistry, Zagreb, Croatia
[2] University Hospital Dubrava, Clinical Department of Laboratory Diagnostics, Zagreb, Croatia

Corresponding author: zvonimir.mlinaric@pharma.unizg.hr

Aim: Artificial intelligence (AI) tools are rapidly integrated into higher education, yet how students perceive and engage with them is scarcely explored. This study aimed to examine the familiarity, frequency and purposes of AI tool use, as well as ethical attitudes and preferences for institutional guidance among pharmacy and medical biochemistry students at the University of Zagreb Faculty of Pharmacy and Biochemistry.

Materials and methods: A cross-sectional anonymous online survey was conducted in March 2025 and offered to all pharmacy and medical biochemistry students. The questionnaire included demographics, familiarity with AI, tools and purposes of use, ethical perspectives, experiences with misuse, and opinions on guidelines. Data were analysed descriptively.

Results: Of 261 respondents (83% pharmacy, 17% medical biochemistry), almost all (95%) had used AI tools, with ChatGPT cited by 98% of users and a few mentioning alternatives such as Gemini, Copilot, or DeepSeek. The main purposes of use were studying (92%), interpreting scientific materials (44%), and preparing presentations (33%), while one-quarter reported using AI for writing seminar papers. Approximately one-third used AI several times per week, and 15% reported daily use. Most students (67%) considered responsible AI use ethical, whereas only 3% viewed it as cheating; however, 9% admitted to unfair use, and 42% knew peers who had done so. Nearly half were unsure of teachers' attitudes toward AI, reflecting a lack of clear institutional policies. A majority (59%) supported the introduction of formal faculty guidelines, and qualitative comments highlighted the need for training on responsible AI use and clarification of acceptable practices.

Conclusions: These findings indicate that AI, particularly ChatGPT, is deeply embedded in students' study routines. It is valued mainly for learning support but accompanied by uncertainty about ethical boundaries. To harness its educational benefits while preserving integrity, pharmacy and medical biochemistry schools should integrate AI literacy and ethics into curricula and establish transparent policies defining appropriate academic use. In May 2025, the Faculty of Pharmacy and Biochemistry adopted an AI Policy, becoming the second constituent unit of the University of Zagreb to do so.

Keywords: Artificial Intelligence; Medical Biochemistry Education; Pharmacy Education; Professional Ethics

PHARMACIST-LED EDUCATION IN LIVER TRANSPLANTATION AT UHC ZAGREB: A MODEL FOR OPTIMIZING MEDICATION SAFETY AND ADHERENCE

Anđela Begonja[1], Emilija Katarina Lozo[1], Viktor Domislović[2], Iva Košuta[2], Ana Ostojić[2], Vlatka Rafaj[2], Vibor Šeša[2], Mirna Alebić[1], Anna Mrzljak[2]

[1] University Hospital Centre Zagreb, Hospital Pharmacy, Zagreb, Croatia
[2] University Hospital Centre Zagreb, Liver Transplant Centre, Zagreb, Croatia

Corresponding author: begonja.andela@gmail.com

The clinical pharmacists, as an integral members of the liver transplant multidisciplinary team at University Hospital Centre Zagreb (UHC Zagreb), play a key role in the individualization and optimization of immunosuppressive and supportive therapy, patient education and promotion of adherence. Their responsibilities encompass the selection and adjustment of immunosuppressive agents based on patient-specific characteristics, including clinical presentation, laboratory findings, therapeutic drug monitoring, and other pertinent clinical parameters, monitoring for drug–drug interactions and adverse effects, ensuring safe and effective dosing regimens. Given that most patients present with multiple comorbidities managed simultaneously by different specialists, clinical pharmacists are responsible for conducting medication reconciliation both at hospital admission and at discharge following liver transplantation. This process focuses on the identification and prevention of therapeutic duplications, omissions, and potential drug–drug interactions. In the outpatient setting, pharmacists continue to monitor and adjust pharmacotherapy to ensure consistency and therapy optimization. Clinical pharmacists play an active role in patient care throughout the post-transplant hospitalization period and during subsequent outpatient follow-ups. Within the framework of Comprehensive Medication Management (CMM), the clinical pharmacist performs a structured four-step process comprising: (1) initial patient assessment, (2) evaluation of medication therapy, (3) development of a care plan accompanied by patient education, and (4) follow-up monitoring. The process aims to ensure that each prescribed medication is appropriate,effective and safe for the specific patient. Importantly, the clinical pharmacist responsible for CMM conducts a comprehensive review of all medications used by the patient, including prescription and non-prescription drugs, herbal products, and dietary supplements. Patient education is a crucial component of this process. It consists of counseling on the importance of strict adherence to prescribed therapy, correct timing and administration of medications, and regular monitoring of key clinical parameters such as blood pressure, blood glucose, and liver function. Additionally, patients receive guidance on diet and lifestyle modifications to support long-term graft function and overall health. Through implementation of continuous collaboration with other members of the liver team, the clinical pharmacist ensures safe, effective, and individualized therapy, contributing significantly to improved patient outcomes and long-term success of transplantation.

Keywords: Clinical pharmacist; Drug therapy; Liver transplantation; Medication adherence

SELF-MEDICATION PRACTICES IN HOUSEHOLDS OF MEDICAL STUDENTS AT THE UNIVERSITY OF RIJEKA

Vedrana Aljinović-Vučić[1,2], Jasenka Mršić-Pelčić[1]

[1] University of Rijeka, Faculty of Medicine, Department of Basic and Clinical Pharmacology and Toxicology, Rijeka, Croatia
[2] Jadran Galenski Laboratorij d. d., Medical Affairs Department, Rijeka, Croatia

Corresponding author: vedrana.aljinovic@gmail.com

Aim: To assess drug storage habits, self-medication practices, and the contents of home pharmacies in the households of medical students at the Faculty of Medicine, University of Rijeka, in 2024.

Methods: A cross-sectional study included 45 third-year medical students, who interviewed their household members about self-medication and listed the medicines stored at home.

Results: Of the participants, 66.7% were female. Healthcare professionals were present in 24.4% of households, including 20% with medical doctors, while the remainder were pharmacists or nurses. In 66.7% of households, medicines were stored in a designated location ("home pharmacy"), while only one household reported having no medications at all. Expired medicines were found in 44.4% of households. Drugs were not accessible to children under 14 years. Lists of stored medicines were obtained from 39 households (86.7%). Analgesics and

antipyretics were present in 94.9% of households and were self-medicated at least occassionally in 89.2% of them. These were followed by topical dermatological products (30.8% of households; self-medicated in 83.3%) and cough and cold preparations (28.2%; self-medicated in 90.9%). Antibiotics were found in 15.4% of households and were self-medicated in 66.7%, while anxiolytics were present in 7.7% and self-medicated in 33.3%.

Conclusion: Self-medication and home drug storage are common among households of medical students at the Faculty of Medicine, University of Rijeka, with analgesics and antipyretics being the most frequently used. These findings emphasise the importance of addressing self-medication during medical education to increase awareness, ensure safe practices, and reduce the risks of inappropriate medicine use.

Keywords: Medical Students; Medicines; Self-Medication

Session C20.
HOW STUDENTS AND TEACHERS FORM RELATIONS

MENTORSHIP MATTERS: A CROSS-SECTIONAL STUDY OF SPECIALTY CHOICE IN FINAL-YEAR MEDICAL STUDENTS

Matija Duda[1], Ivan Damjanović[2], Darko Kaštelan[1,3], Tina Dušek[1,3], Robert Likić[1,3]

[1] University of Zagreb School of Medicine, Department of Internal Medicine, Zagreb, Croatia
[2] General Hospital Našice, Našice, Croatia
[3] University Hospital Center Zagreb, Zagreb, Croatia

Corresponding author: matija.duda@gmail.com

Aim: This study aimed to examine the specialty preferences of final-year medical students at the University of Zagreb School of Medicine and to explore how teaching staff, mentorship, and clinical experiences influence these choices.

Materials and Methods: We conducted a cross-sectional survey among sixth-year students at the University of Zagreb School of Medicine. An electronic questionnaire collected data on demographics, current top three specialty preferences and first choice from years three to six, as well as nine attitude items rated on five-point scales (work–life balance, anticipated salary, influence of experiences during clinical rotations, understanding of daily specialty work, openness to changing preferences, quality of staff interactions, avoidance due to negative atmosphere, perceived influence of staff behavior, and confidence in one's choice). Descriptive statistics summarized specialty preferences and reasons for change. Multivariable models were used to examine associations between attitudes and first-choice specialties.

Results: Of 272 eligible sixth-year students, 118 completed the survey (response rate 43.4%). Most respondents were female (73.7%). From years three to five, interest in gynecology and otorhinolaryngology increased, cardiology declined from an early peak, and family medicine gained prominence by graduation. In the sixth year, the most frequently mentioned specialties across the top three choices were family medicine (26), endocrinology (23), gynecology and obstetrics (22), pediatrics (18), otorhinolaryngology (16), radiology (15), ophthalmology (15), cardiology (13), dermatology (11), and anesthesiology (11). In multivariable analyses, higher perceived influence of staff behavior was associated with selecting cardiology and endocrinology, and higher confidence related to greater likelihood of choosing a surgical field. Students most often cited clinical experience, interpersonal dynamics and atmosphere, lifestyle considerations, burnout concerns, and mentorship as reasons for changing their first choice.

Conclusions: The findings indicate that the clinical learning environment is a key determinant of specialty choice. Prioritizing high-quality clinical exposure and mentorship in shortage specialties such as family medicine, pediatrics, and gynecology – particularly in underserved settings – is likely to yield the greatest benefit.

Keywords: Career Choice; Health Workforce; Medical Faculty; Medical Students; Preceptorship

Session C21.
TIME FOR DEVELOPING INTERNATIONAL COMPETENCIES

TRANSPLANT MEDICINE WITHOUT BORDERS: THE UEMS TRANSPLANT MEDICINE BOARD'S EFFORTS TO STANDARDIZE TRAINING AND PRACTICE

Anna Mrzljak, Miha Arnol, Susanne Beckebaum, Isabelle Binet, Vito Cicinnati, Caroline den Hoed, Antoine Durrbach, Speranta Iacob, Smaragdi Marinaki, Anna Paola Mitterhofer, Núria Montero Pérez, Susana Sampaio, Adam Remport, Pablo Ruiz Francesca Tinti, Marios Prikis

UEMS Board of Transplant Medicine, Section of Surgery, UEMS, Brussels, Belgium

Corresponding author: anna.mrzljak@gmail.com

The presentation introduces the mission, structure, and educational initiatives of the European Board of Transplant Medicine (EBTM) within the UEMS Section of Surgery, highlighting its role in fostering excellence and harmonization in transplant medicine training across Europe and beyond. Transplant medicine is one of the most multidisciplinary and rapidly evolving fields, integrating surgical, medical, and scientific expertise. To ensure uniform educational standards and quality of patient care, the UEMS established the EBTM in 2007 with the goal of promoting excellence in training, assessment, and continuous professional development of transplant physicians. The Board currently unites 17 representatives from 13 European countries and collaborates closely with the UEMS Section of Surgery and the European Society for Organ Transplantation (ESOT). Its core activity is the European Transplant Medicine Examination, an oral assessment covering modules in Common Trunk, Kidney, and Liver Transplantation for candidates with at least two years of formal transplant medicine training. The examination evaluates clinical reasoning and decision-making in Transplant Hepatology and Nephrology through open questions and interactive, case-based discussions. The Honorary Certificate will be discontinued by the end of 2026 to reinforce standardized assessment. Successful candidates are awarded the Fellow of the European Board of Transplant Medicine (FEBTM) certificate, a credential recognized throughout Europe. As of 2025, 147 physicians have earned this distinction. The EBTM is now modernizing its activities through preparatory courses, enhanced collaboration with transplant surgeons, and expansion of its Ambassadorship Program to strengthen visibility and engagement, particularly in countries outside the EU. Recognizing Transplant Hepatology and Nephrology as official subspecialties remains essential for ensuring professional identity, mobility, and consistent quality of care across Europe. Key goals include achieving this recognition and developing a system for accreditation of training centres. The Board promotes knowledge dissemination through monthly meetings, participation in major scientific congresses, and social media outreach. Through these ongoing educational efforts, the EBTM supports the development of highly skilled transplant physicians capable of delivering optimal patient care and advancing European and international transplant medicine.

Keywords: Harmonization; Medical Education; Transplant Medicine; UEMS

MEDICAL STUDIES IN ENGLISH: 22 YEARS OF INTERNATIONALISATION – LESSONS LEARNED, CHALLENGES TO OVERCOME

Davor Ježek

University of Zagreb, School of Medicine, Zagreb, Croatia

Corresponding author: davor.jezek@mef.hr

The University of Zagreb School of Medicine has a long tradition of welcoming international students. This presentation aims to provide an overview of the Medical Studies in English programme at the University of Zagreb, School of Medicine. In the 1970s and 1980s, nearly 400 international students studied there, many from the Croatian diaspora. The English-language program was launched in 2003, following Croatia's post-war recovery and growing European integration. The School designed a six-year curriculum aligned with EU standards (over 5500 teaching hours, ECTS credits, electives). Innovations included new sixth-year courses (geriatrics and addiction medicine), integrated modules in neurology and infectious diseases, problem-based learning, and

international knowledge assessments (MCAT and USMLE). The first cohort, mostly Croatian diaspora from North America, enrolled in 2003. Since then, the number of students has continued to grow steadily. Admission requires demanding exams in physics, chemistry, and biology. Competition is intense: on average, 400 applicants vied for 50 spots each year. By 2025, more than 466 physicians from 37 countries had graduated, with many diaspora students choosing to remain in Croatia, strengthening the national healthcare system. The program actively embraced the Bologna Process, gaining approval from the Ministry in 2005. Mobility and exchange were fostered through Erasmus and Erasmus+, with students arriving from more than 15 EU countries, the United States of America and Asia. The program also hosts guest lecturers, encouraging research cooperation, faculty exchange, and improving staff's language competence. In 2015, the English Studies received the prestigious CeQuInt Certificate from the European Consortium for Accreditation, recognising excellence in internationalisation – the first medical school in the EU to achieve this. Its success inspired other medical/biomedical schools at the Universities of Rijeka, Split and Osijek (including Dental Medicine and Veterinary Medicine in Zagreb) to introduce English programs. By academic year 2025/2026, 1108 students from over 40 countries were enrolled, making the program a cornerstone of Croatia's medical education and a contributor to global healthcare. Together with the Croatian Agency for Science and Higher Education, the University of Zagreb School of Medicine will seek recognition from the World Federation for Medical Education (WFME) at the national level and encourage enrolled students to pass the United States Medical Licensing Exam. Today, the Medical Studies in English serve as a hub of academic internationalisation, student and staff mobility, and global scientific collaboration.

Keywords: Medical Education; International Graduates; Internationalisation; Student Exchange; USMLE; WFME

Session C22.
INTERPROFESSIONAL EDUCATION

THE IMPORTANCE AND ROLE OF NURSES IN THE EDUCATION OF FUTURE MEDICAL DOCTORS

Rozmari Tusić

Health Center of Primorje-Gorski Kotar County, Rijeka, Croatia

Corresponding author: rozmari.tusic@domzdravlja-pgz.hr

The aim is to present the importance and role of nurses in the education of future and young medical doctors, as well as the possibility of developing a joint curriculum for nursing and medical students. In Croatia, nurses are still not formally recognized as educators of medical doctors, although they are involved in informal education. To date, no research has been conducted on the role of nurses as educators of physicians. For nurses to participate in formal education in the future, it is essential that they possess a high level of knowledge and skills that can be transferred to doctors. In current practice, there is a clear need for interdisciplinary education, since it is well known that during formal training students do not acquire sufficient practical skills, which must instead be developed through additional learning opportunities. The World Federation for Medical Education recommended interprofessional education (IPE) 1988. Interprofessional education is a method of joint training of professionals to achieve a common goal. Learning opportunities that encourage interprofessional education and practice are still rare in our educational environment. Today, in some countries, interprofessional cooperation (IPC) or interprofessional education (IPE) for doctors and nurses is implemented, recognizing the importance of interdisciplinary education. Nurses educate doctors about different roles within the healthcare team, challenge stereotypes, and encourage mutual understanding and respect for the contributions of each profession. Most nurses believe they contribute to medical education – particularly in teaching technical procedures, medical documentation, clinical tasks related to medication, and other skills. The support nurses provide is in fact part of their "invisible work," contributing to the hidden curriculum of medical and other health professions education.

Keywords: Education; Interprofessional Teamwork; Medical Doctor; Nurse

BUILDING COMPETENCE THROUGH MULTIDISCIPLINARY TEAM MEETINGS IN LIVER TRANSPLANTATION AT UNIVERSITY HOSPITAL CENTRE ZAGREB

Hrvoje Silovski[1,2], Iva Košuta[1,2], Viktor Domislović[1], Vibor Šeša[1], Maja Sremac[1], Tihomir Bradić[1], Ana Ostojić[1], Sanja Križanić[1], Robert Baronica[1], Tina Tomić Mahečić[1], Vanja Slilić[1], Ivona Hanžek[1], Karolina Režek[1], Loredana Divjak[1], Martina Čalušić[1], Marija Planinić[1], Mirjana Ćorić[1,2], Ana Lukač[1], Stela Bulimbašić[1], Anita Zenko Sever[1], Neven Papić[1,2,3], Iva Martina Strajher[1], Igor Petrović[1,2], Jurica Žedelj[1], Ivan Romić[1], Ognjan Deban[1], Tomislav Baotić[1], Tomislav Bubalo[1], Ivan Štironja[1], Goran Pavlek[1], Anamarija Alduk[1], Ružica Galunić Čičak[1], Anđela Begonja[1], Emilija Katarina Lozo[1], Branka Jukić[1], Irena Škondro[1], Danijela Rašić[1], Davor Mijatović[1,2], Anna Mrzljak[1,2]

[1] University Hospital Centre Zagreb, Liver Transplant Centre, Zagreb, Croatia
[2] University of Zagreb, School of Medicine, Zagreb, Croatia
[3] University Hospital for Infectious Diseases Dr. Fran Mihaljevic, Zagreb, Croatia

Corresponding author: anna.mrzljak@gmail.com

The aim of this presentation is to demonstrate how the structured implementation of multidisciplinary team (MDT) meetings has enhanced clinical competence, coordination, and educational value, leading to a substantial increase in the number of liver transplantations at the University Hospital Centre (UHC) Zagreb. Materials and Methods: Croatia has one of the highest organ donation and transplantation rates globally, and UHC Zagreb is the country's largest solid organ transplant centre, performing kidney, liver (adult and paediatric), heart, lung, and combined organ transplantations. The Liver Transplant Centre within UHC Zagreb was reorganized four years ago and formally established a structured MDT model including hepatologists, transplant surgeons, anesthesiologists, radiologists, pathologists, infectious disease specialists, microbiologists, transfusion medicine specialists, nurses, and clinical pharmacists. Weekly MDT meetings are dedicated to comprehensive patient evaluation, case prioritization, perioperative and postoperative management, and ethical decision-making, while developing professional growth through interprofessional education. A critical component of this process is the systematic recording of meeting minutes, which document decisions, rationale, and educational takeaways. These records are archived in a shared digital database and serve as an ongoing educational resource, ensuring knowledge transfer, transparency, and standardization of clinical practice. Results: Since the introduction of structured MDT decision-making and systematic documentation, the number of liver transplants performed at UHC Zagreb has increased markedly, from fewer than 10 procedures annually in the early 2010s to 25 in 2022, 32 in 2023, and 36 in 2024. The Centre currently performs approximately 35% of all national liver program. MDT implementation has improved coordination, efficiency, and patient outcomes, while meeting minutes have proven invaluable for ensuring consistency, quality assurance, and shared learning within the team. Conclusions: The UHC Zagreb Liver Transplant experience highlights that structured MDT meetings supported by documentation and interprofessional learning form a strong foundation for institutional growth. Multidisciplinary collaboration, continuous education, and traceable meeting records have led to sustained improvement in liver transplantation outcomes.

Keywords: Clinical Competence; Croatia; Interprofessional Education; Liver Transplantation; Meeting Minutes; Multidisciplinary Team; Patient Safety

EDUCATION IN MAMMOGRAPHIC POSITIONING AND INTERPRETATION OF MAMMOGRAMS

Maja Karić[1,3], Doris Šegota Ritoša[2], Petra Valković Zujić[3,4]

[1] University of Rijeka, Faculty of Health Studies, Department of Radiological Technology, Rijeka, Croatia
[2] Clinical Hospital Center Rijeka, Department of Medical Physics and Radiation Protection, Rijeka, Croatia
[3] Clinical Hospital Center Rijeka, Clinical Department of Diagnostic and Interventional Radiology, Rijeka, Croatia
[4] University of Rijeka, Faculty of Medicine, Department of Radiology, Rijeka, Croatia

Corresponding author: maja.karic@uniri.hr

The School of Principles of Mammographic Positioning and Interpretation of Mammograms at the Clinical Department of Diagnostic and Interventional Radiology, Clinical Hospital Centre (CHC) Rijeka, represents a national model of professional training and optimization of mammographic diagnostic procedure in Croatia. This structured program integrates theoretical and practical modules aimed at enhancing the skills of radiology

professionals, thereby improving the accuracy, safety, and efficiency of breast cancer imaging. Proper breast positioning is essential for achieving diagnostic image quality, as incorrect positioning can lead to omitted glandular tissue, missed lesions, artifacts, repeat examinations, and increased absorbed dose delivered to the patient. Standard projections must include the maximum amount of glandular and subcutaneous tissue with adequate compression, which reduces breast thickness, mean glandular dose, and artifacts. Automated systems and artificial intelligence algorithms are highly sensitive to artifacts, further underscoring the need for high-quality acquisition. While breast compression remains critical for visualization and dose reduction, studies show that optimal compression force is not standardized, varying across institutions, devices, and technologists. Individualized compression tailored to patient comfort improves diagnostic quality without compromising image value. European guidelines emphasize quality control, continuous training, protocol implementation, feedback, and communication with patients. Training radiographers has a direct impact on image quality, while radiologists' targeted education strengthens interpretive accuracy. From 2018 to 2024, more than 200 professionals, including radiographers, radiologists, and other staff involved in breast cancer care, successfully completed the program, acquiring competencies in positioning, imaging methods, equipment use, and quality control. The steady increase in participants demonstrates strong professional motivation and recognition of the need for standardized practice. This initiative confirms that structured education not only enhances diagnostic accuracy and reduces technically inadequate images but also minimizes unnecessary dose to patient, strengthens professional expertise, and fosters multidisciplinary collaboration. The School of Mammographic Positioning and Interpretation of Mammograms at CHC Rijeka has grown into a nationally and internationally relevant model, integrating scientific advances, European guidelines, and national regulations, thereby supporting high-quality breast cancer diagnostics and patient safety.

Keywords: Breast Positioning; Diagnostic Quality; Mammography; Professional Education; Quality Control

HOW PREPARED ARE HEALTHCARE INSTITUTIONS IN THE REPUBLIC OF CROATIA FOR MEDICAL STUDENT VOLUNTEERING?

Gordana Šimunković[1,2]

[1] University of Rijeka, Faculty of Medicine, Department of Social Sciences and Medical Humanities, Rijeka, Croatia
[2] University of Rijeka, Faculty of Medicine, Department of Social Medicine and Epidemiology, Rijeka, Croatia

Corresponding author: gordana.simunkovic@uniri.hr

Aim: To determine capacity and the level of readiness of Croatian healthcare institutions to include volunteering.

Materials and Methods: Mixed research approach was employed, which included conducting an online survey and interviews. The research was based on the community readiness model and on the quality standards of volunteer programs. The survey included 28.85% (N = 45) of public healthcare institutions, excluding pharmaceutical services and dental medicine. Interviews were conducted with the leadership of healthcare institutions that include volunteering (N = 10), employees of healthcare institutions that involve volunteering (N = 7), and individuals who volunteer in healthcare institutions (N = 10).

Results: The findings revealed that healthcare institutions are at the "Vague Awareness" level (the third out of nine levels of readiness), with the lowest score in the Resources dimension. The main direction for advancing to a higher level of readiness was identified as taking responsibility to incorporate volunteering as a resource within a healthcare institution, adopting the stance: "This is important. What can we do?" The average value for all the observed criteria to determine capacity to include volunteering, according to the quality standards of volunteer programs, is 1.85.

Conclusion: To strengthen the capacity of healthcare institutions to include medical student in volunteering, it is essential and of high priority to raise the level of readiness of healthcare institutions for involving volunteers to the highest level across all dimensions of readiness (resources, knowledge, leadership, and organizational climate). As part, it is necessary to improve the capacities of healthcare institutions for volunteering by aligning them with the quality standards of volunteer programs. Priority areas include: developing human resources within healthcare institutions who will be available full-time to coordinate volunteering; establishing an effective

information system on volunteering for healthcare institutions; and raising awareness about the importance and potential of volunteering within the healthcare system and importance and potential of volunteering for the medical students.

Keywords: Health Facilities; Medical Students; Organizational Innovation; Program Development; Volunteerism

Session C23.
EQUITY, DIVERSITY AND INCLUSIVITY

TEACHING DIVERSITY IN HEALTHCARE PROFESSIONS EDUCATION AT THE UNIVERSITY OF RIJEKA

Robert Doričić[1,2]

[1] University of Rijeka, Faculty of medicine, Department of Social Sciences and Medical Humanities, Rijeka, Croatia
[2] Faculty of Health Studies, Department of Public Health, Rijeka, Croatia

Corresponding author: robert.doricic@uniri.hr

The concept of diversity competence enables the provision of healthcare tailored to the needs of the individual and develops insight and empathy into the patient's beliefs, values, experience and behaviour. Analysis of the curricula of higher education institutions of healthcare professions in Croatia showed that there is a lack of education aimed at developing diversity competences of future healthcare professionals. According the results of course curricula the emphasis on patients' rights and the importance of respect for integrity and autonomy, as well as the importance of communication skills, is noticeable, but the vulnerability of persons/groups exposed to social inequality is very generally mentioned. That absence is also indicated by a quantitative study on diversity competences of students conducted among students of healthcare professions at the University of Rijeka. Results showed limited coverage of cross-cultural aspects in clinical lectures, with being more prevalent in the nursing study programme than in medicine. Furthermore, according to the qualitative study among teachers at the Faculty of health studies and the Faculty of medicine in Rijeka on their experiences and obstacles to the development of diversity competences towards members of certain vulnerable groups in the healthcare system, it may be concluded that educators acknowledge the multidimensional nature of diversity, especially in the context of vulnerable groups, but their engagement with these themes is inconsistent and often dependent on individual values, personal motivation, or disciplinary norms. The results of research conducted among students and teachers at the University of Rijeka, as well as experiences in the field of higher education of health professions from neighboring Slovenia, which shares a similar cultural environment with Croatia and is faced with similar challenges in providing healthcare to minority groups, could serve as a good basis for the development of an education model in study programs for healthcare students at the University of Rijeka, but also beyond. As the first study program in which it was possible to implement the results of the aforementioned research and good practices in the creation of a new mandatory course "Health inequality" as part of the newly launched YUFE joint study "Urban inequality", which has been held at the University of Rijeka since this academic year and which will also be presented.

Keywords: Croatia; Diversity Competence; Health Education; Minority Groups

ESTABLISHING SUSTAINABLE EQUITY, DIVERSITY & INCLUSIVITY FRAMEWORKS IN ACADEMIA: BEST PRACTICES & INSTITUTIONAL STRATEGIES

Sandra Nuždić[1], Daria Glavan Šćulac[2]

[1] University of Rijeka, University Counselling Centre, Rijeka, Croatia
[2] University of Rijeka, Department for International Legal Affairs, Ethical Issues, and Diversity Policies, Rijeka, Croatia

Corresponding author: sandra.nuzdic@uniri.hr

This short lecture explores the development and implementation of sustainable frameworks for equity, diversity, and inclusion (EDI) within higher education, using the University of Rijeka as a case study. As an integral component of the University's mission and institutional culture, EDI principles shape all dimensions of academic and administrative endeavors. The presentation will outline how EDI principles are systematically integrated into institutional strategies and operationalized through concrete initiatives, programs, and support mechanisms. It will also highlight examples of best practices that have contributed to creating a more inclusive and equitable academic environment. At the same time, the lecture will address the challenges inherent in maintaining momentum, measuring impact, and ensuring that EDI efforts remain embedded and sustainable within complex academic systems. Lessons learned from the University of Rijeka's experience may offer transferable insights for other institutions striving to build more inclusive and resilient academic communities.

Keywords: Diversity; Equity; Higher Education; Inclusion; Institutional Culture

THE ROLE AND SIGNIFICANCE OF HUMANITIES IN MEDICAL EDUCATION

Gordana Pelčić[1], Igor Eterović[2]

[1] University of Rijeka, Faculty of Medicine, Department of Social Sciences and Medical Humanities, Rijeka, Croatia / Health Care Center of Primorje Gorski Kotar County, Rijeka, Croatia
[2] University of Rijeka, Faculty of Medicine, Department of Social Sciences and Medical Humanities, Rijeka, Croatia

Corresponding author: igor.eterovic@uniri.hr

Medicine is a call, deeply rooted in fundamental human values. Medicine is not just a profession. Medicine is not just a science either. This is the self-evident truth present from the time of Hippocrates and the birth of western medicine, but also envisaged in the old traditional medical schools of India and China. Humanities in medicine, or so-called medical humanities have a distinguished role to bring out, present and analyze humanistic values in a way to show and remind of exquisite humanistic nature of medicine and medical sciences. Indisputably, ethics is a backbone of such enterprise, but the power of other humanities such as history and pedagogy could not be underestimated. On the example of several historical cases, we show that ethics, history and pedagogy are indispensable for medical education of new generations of medical workers in the sense of strengthening their humanistic core values which carry the significance and importance of medicine as such. In other words, we argue that to be a good human is a prerequisite for being a good physician. Role of humanities are exactly to uncover and discuss the ways of being more humane. In the context of medical humanities this can take even greater importance because of the direct need of caring for vulnerable groups (patients generally, but also children, elderly etc.). History (primarily historical cases) appears as a unique pool for the first-class ethical analysis in the framework of modern pedagogical tools and modalities. Thus, medical humanities and their improved implementation in medical curricula come up as an indispensable part of modern medical education.

Keywords: Education; History of Medicine; Medical Education; Medical Ethics; Medical Humanities; Values

MEDICAL ETHICS AS THE NUCLEUS OF THE CURRICULUM OF THE STUDY OF MEDICINE AND RELATED STUDIES

Morana Brkljačić[1,2,3]

[1] Special Hospital AGRAM – Polyclinic Rijeka, Rijeka, Croatia
[2] University of Rijeka, Faculty of Biotechnology and Drug Development, Rijeka, Croatia
[3] Croatian Catholic University, Zagreb, Croatia

Corresponding autor: morana.brkljacic@agram-bolnica.hr, morana_brkljacic@yahoo.co.uk

Medical ethics is professional ethics and represents ethical theory and practice in medicine. As such, it encompasses all professional groups in healthcare and medicine. Medical ethics, by its existence as professional ethics, ensures the possession of moral values as basic indicators of the medical profession on which the relationship between the doctor and the patient, the relationship of all members of the healthcare team, as well as the relationship of healthcare professionals towards society as a whole, is based. Ethics is understood as a theory that regulates human behavior in order to protect certain social values. From an ethical point of view, human actions, deeds, and actions can be "morally good", "morally bad - evil" or "morally neutral". When approaching the profession of a doctor or other health care worker, the basic motive is, or at least should be, altruism - love for others, in which there must be no morally bad decisions. The basic condition for their absence is knowledge of "morally good" and "morally bad" in medicine, which is what medical ethics deals with in a scientific and professional sense. Ethical prerequisites for the quality implementation and organization of health care primarily relate to defining solutions with the aim of promoting social welfare in general as well as the welfare of the patient in order to reduce or alleviate the effects of medically caused harm. Resolving clinical ethical dilemmas in medicine includes the ability and ability to assess one set of risks in relation to another and the ability to balance competing moral values. Through the foundation of medical action, which is reflected in: preserving the inviolability of human life, and its prolongation, the quality of life and human dignity, and the fact that the doctor treats the patient, the disease even at the cost of his own life (the Hippocratic Oath), it is visible how many ethical moments are in the aforementioned guidelines. Accordingly, medical ethics is a component of numerous courses in medical studies as well as related faculties. The relationship between doctor and patient, doctor and colleague, and doctor in everyday work is becoming increasingly clear in medicine on the basis of moral issues, which results in: the necessity of making ethical decisions, competence and education, dealing with ethical conflicts and dilemmas in practice and their resolution, and representation in Ethics Committees. The starting point from which other items in medical ethics education at the university level arise is that all students of medicine, dentistry, biotechnology, sanitary engineering, dental hygiene, nursing, midwifery, and medical radiology engineers have the opportunity to systematically become familiar with the ethical problems of their future profession and occupation. The word systematically means understanding the nature of ethics and accepting the relationship between ethical theories and professional moral dilemmas. Universities, Medical faculties and Faculties of Dentistry, Biotechnology, and Health studies are the institutions that are most responsible for interpreting and practically implementing moral values and demonstrating the professional moral actions of future health workers.

Keywords: Clinical Ethical Dillemas; Education; Medical Ethics; Moral Values

Session C24.
BEYOND THE WHITE COAT: LEADERSHIP AS A CORE COMPETENCY

THE IMPORTANCE OF EDUCATION IN THE FIELD OF QUALITY MANAGEMENT IN HEALTHCARE

Jasna Mesarić[1], Diana Šimić[2], Damir Ivanković[3]

[1,2,3] Libertas International University, Faculty of Health Science, Zagreb, Croatia
[2] University of Zagreb, Faculty of Organization and Informatics, Zagreb, Croatia

Corresponding author: jmesaric@libertas.hr

Healthcare quality management requires skilled human resources. Pre-service education may not equip health and non-health professionals with the specialized competences needed for healthcare quality management. As a result, they require more education and training to acquire these competences. The aim of this paper is to provide a better understanding of competences needed for healthcare quality management based on a preliminary literature review and a non-exhaustive scan of existing educational offerings. There are considerable differences in types of education programs available in different countries. The UK and United States of America recognize healthcare quality management as a special occupation requiring formal university graduate level education. In the United States of America, there is a special accreditation system for such programs requiring coverage of 13 competence domains. Four of these domains are considered foundational: safety and error science, improvement science and quality principles, evidence-based practice, and measurement and process improvement. The UK National Occupation Standards also recognize a specific occupational role of quality assurance manager requiring 15 core competences. In EU member states accreditation of tertiary study programs is carried out in accordance with the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG). There are no specific requirements for contents relevant for healthcare quality management. Thus, there are differences in competences provided by different study programs. In addition to formal graduate level programs, it is also possible to enroll in short professional trainings, and short formal study programs at graduate and postgraduate level. One of the more recent approaches to lifelong learning in EU is through micro-credentials, which certify the learning outcomes of short courses or trainings, offering a flexible, targeted way of obtaining competences for professional development. A brief overview of different types of educational programs and competences they provide is given, including the only such program accredited in Croatia. Drawing on the Croatian postgraduate experience, we describe how structured curricula, workplace-based projects and mentorship can bridge classroom learning with on-site improvements in healthcare organizations. We propose practical steps for universities to strengthen management of quality of care and patient safety (MQoC&PS) education: embed core domains across pre-service curricula; scale flexible, work-integrated postgraduate pathways; and support faculty development to teach improvement and safety.

Keywords: Health Care Quality Assurance; Leadership; Patient Safety; Professional Education; Quality Improvement

Session C25.
BURN-OUT SYNDROME AND THE IMPORTANCE OF MENTAL HEALTH OF STUDENTS AND TEACHERS

RUNNING ON EMPTY: WHY MEDICAL EDUCATION CANNOT AFFORD TO IGNORE BURN-OUT

Doris Ilic

St. Joseph's University Medical Center, Emergency Department, Paterson, NJ, United States of America

Corresponding author: Dorisilic1212@gmail.com

Burnout among physicians, residents, and medical students has become a public health crisis with profound consequences for individual well-being, patient safety, and the sustainability of the healthcare workforce. The aim of this presentation is to explore the multifaceted nature of burnout within medical education and to highlight evidence-based strategies for recognizing, preventing, and managing it at both the personal and institutional levels. The lecture will highlight current trends and data illustrating how chronic stress, long work hours, and performance pressures contribute to emotional exhaustion, depersonalization, and loss of fulfillment. It will also address how institutional culture and the hidden curriculum can reinforce unhealthy norms that perpetuate burnout. Finally, attendees will learn key strategies to promote resilience and wellness, including self-awareness, peer support, and organizational change. The ultimate goal of this session is to empower educators and trainees to recognize burnout not as a personal failure, but as a systemic signal demanding collective responsibility and reform.

Keywords: Medical Education; Medical Students; Physicians; Professional Burnout; Psychological Stress; Residency

STUDENTS' MENTAL HEALTH IN THE DIGITAL AGE: BURNOUT AS THE NEW REALITY

Ivana Pavlinac Dodig

University of Split School of Medicine, Department for Neuroscience and Sleep Medicine Center Split, Croatia

Corresponding author: ivana.pavlinac@mefst.hr

Digital exposure represents a significant challenge to students' mental health. Digital media and social networks have become an integral part of everyday life, offering numerous advantages but also posing substantial risks. Digital stimulation through interactive media, notifications, and screens has emerged as a major disruptor of healthy sleep patterns, which are essential for emotional and mental health, particularly in adolescents and young adults. Long-term effects of excessive digital media use are chronic sympathetic and limbic system activation, reduced prefrontal cortex activity, and altered dopaminergic reward circuits, contributing to stress, anxiety, and weakened self-regulation. Psychological consequences of digital stimulation at bedtime are increased alertness and cognitive arousal, delaying sleep onset. Exposure to blue light emitted by screens suppresses melatonin secretion, delays sleep onset, and disrupts circadian rhythms, reducing deep and REM sleep. Epidemiological studies on medical students show that severe social media users have worse sleep quality, prolonged sleep latency, and delayed sleep than moderate users. In addition, >3 hours of daily social media use correlates with increased symptoms of burnout, including emotional exhaustion, depersonalization, and reduced sense of personal accomplishment. Although burnout has traditionally been linked to professional environments, it is increasingly recognized in student populations. Risk factors include information overload, constant availability, social comparison, and lack of offline time, driven by digital stimulation. Consequences range from poor academic achievement to cognitive impairment, emotional instability, mental health disorders, and sleep disturbances, perpetuating a vicious cycle. In conclusion, while digital technology shapes students' daily lives, it also requires targeted strategies to preserve mental health. Recommended measures include practicing digital hygiene (limiting screen time, especially before bedtime), raising awareness about the risks of overuse, promoting a balanced lifestyle with physical activity, and strengthening institutional support for the early recognition and prevention of burnout.

Keywords: Burnout; Circadian Rhythm; Mental Health; Sleep; Social Media; Students

BURNOUT, BANDWIDTH AND BEDSIDE MANNER

Ivan Hriljac

Psihijatrijska bolnica Lopača, Department of Psychiatry, Dražice, Croatia

Corresponding author: ivan.hriljac@pbl.hr

The lecture examines how the pressures in digital age reshape the way a clinician provides patient care in acute and chronic psychiatric settings. Emerging digital infrastructures and continuous connectivity do not always ease the administrative burden, instead, they can increase the digital stress and the mental load for health personnel, reducing their cognitive bandwidth, degrading their communication and the treatment of the patients, and increasing the risk of emotional exhaustion and clinical disengagement. Drawing on observations from acute and chronic psychiatric practice and current evidence for the causal links between digital stress, workload and compassion fatigue, this lecture examines mechanisms by which electronic administration and alert overload amplify the stress and the effects on clinical decision making. Improved bedside approaches can preserve therapeutic alliance amid emerging pressures. Practical interventions are presented through strategies aimed at improving the attention and the emotional presence of the clinician during patient care, and strategies aimed at improving the team workflow and integrity to reduce unnecessary friction. Several clinical examples highlight the satisfaction and improvement of both the clinican and the patient when bandwidth is intact and cascading treatment failures when it is not. The bedside manner is a skill that can be trained, cultivated and protected, and should not be passively assumed.

Keywords: Burnout; Communication; Digital stress; Health Personnel; Psychiatry; Workload

BURNOUT IN DENTAL EDUCATION: ARE WE ADDRESSING THE MENTAL HEALTH OF STUDENTS AND TEACHERS ADEQUATELY?

Nevena Josipović

University of Maribor, School of Dental Medicine, Department of Prosthodontics, Maribor, Slovenia

Corresponding author: drnevena.josipovic@gmail.com

The dental profession is widely recognized as one of the most stressful healthcare fields. The stress associated with the dental profession often begins to emerge during dental studies. From early in their education, students are exposed to the pressures of precision-based tasks, clinical responsibilities, and the expectation to perform flawlessly in patient care scenarios. On the other hand, teachers in dental schools must balance clinical duties, academic responsibilities, and mentorship roles. As a result, both dental students and teachers may experience emotional exhaustion and anxiety. Burnout has become a major concern in dental education. The aim of this presentation is to examine whether the mental health needs of dental students and teachers are being adequately addressed in the context of burnout prevention and management. Existing institutional responses often rely on isolated wellness programs, which may not tackle deeper systemic issues such as curriculum design, assessment practices, or organizational culture. More sustainable approaches include accessible psychological support, peer mentoring, and faculty development initiatives aimed at resilience. Institutes should design and implement targeted interventions on energy management to strengthen students and teachers' well-being. By reviewing available evidence and highlighting best practices, this presentation emphasizes the need for a systemic, proactive approach to supporting mental health in dental education, ensuring a healthier and more sustainable future for the profession.

Keywords: Dental Education; Dental Faculty; Dental Students; Mental Health; Professional Burnout

ANALYSIS OF PSYCHOSOCIAL STRESORS AMONG DENTAL STUDENTS IN SARAJEVO AND ZAGREB

Zrinka Biloglav[1,2], Ivana Škrlec[3], Petar Medaković[4], Ivan Padjen[5,6], Tatjana Ružić[7], Anđelo Kurtin[2], Selma Jakupović[8], Vedran Jakupović[9], Džan Ahmed Jesenković[10], Simeona Olić[11], Nicole Stojanović[11], Eva Mandić[11], Emanuela Živko[11], Danijela Marović[11]

[1] School of Public Health Andrija Štampar, Department of Medical Statistics, Epidemiology and Medical Informatics, Zagreb, Croatia
[2] University of Zagreb, School of Medicine, Zagreb, Croatia
[3] Josip Juraj Strossmayer University of Osijek, Faculty of Dental Medicine and Health, Osijek, Croatia,
[4] Department of Radiology, Polyclinic Croatia, Zagreb, Croatia
[5] University of Zagreb, School of Medicine, Division of Clinical Immunology and Rheumatology, Department of Internal Medicine, University Hospital Centre Zagreb, Zagreb, Croatia
[6] University of Zagreb, School of Medicine, Zagreb, Croatia
[7] University Hospital Centre Rijeka, Department of Psychiatry, Rijeka, Croatia
[8] University of Sarajevo, Faculty of Dentistry with Clinics, Department of Restorative Dentistry and Endodontics, Sarajevo, Bosnia and Herzegovina
[9] University of Sarajevo, Faculty of Health Studies, Sarajevo, Bosnia and Herzegovina
[10] University of Sarajevo, Faculty of Medicine, Department of Epidemiology and Biostatistics, Sarajevo, Bosnia and Herzegovina
[11] University of Zagreb School of Dental Medicine, Zagreb, Croatia

Corresponding author: zrinka23@yahoo.com

Aim: To compare the level of stress caused by non-academic stressors among undergraduate dental students at the School of Dental Medicine, University of Zagreb, and the Dental School, University of Sarajevo.

Materials and Methods: This cross-sectional study was conducted among undergraduate dental students in Sarajevo (n = 324) during 2023–2024 and in Zagreb (n = 355) during 2022–2023, using a self-administered questionnaire constructed for the purpose of the study. Stress levels were measured on a Likert scale ranging from 1 (not stressful) to 5 (extremely stressful). The following stressors were included: career concerns, concern for future quality of life, parental expectations, family problems (loss of connection, illness, etc.), conflict between personal and student life, lack of free time, relationships with the opposite sex, loneliness, difficulty socializing with colleagues, competition among colleagues, thoughts about leaving studies, and decision to leave the profession after graduation. Statistical analyses were conducted in JASP, with a significance level set at $p < 0.05$.

Results: The highest median (Mdn) values in Sarajevo and Zagreb were observed for career concerns (4.00 vs. 3.00), concern for future quality of life (4.00 vs. 3.00), lack of free time (3.00 vs. 3.00), and commuting time (2.00 vs. 3.00). The average stress levels for these stressors were significantly higher among Sarajevo dental students compared to their colleagues in Zagreb. Dental students considered relationships with the opposite sex, loneliness, thoughts about leaving studies, and the decision to leave the profession after graduation as not stressful at all.

Conclusions: Dental students in Sarajevo and Zagreb showed a similar pattern of stress caused by psychosocial stressors. Further research is needed to provide more detailed insights into the complex associations between various stressors among students.

Keywords: Bosnia And Herzegovina; Croatia; Dental Students; Psychosocial Stressors

WORKSHOP
WE TREAT EVERYONE BUT OURSELVES: MENTAL HEALTH OF MEDICAL STUDENTS

Dunja Degmečić[1,2]

[1] University Josip Juraj Strossmayer in Osijek, Faculty of Medicine, Department of Psychiatry and Psychological Medicine, Osijek, Croatia
[2] Clinical Hospital Centre Osijek, Psychiatric Clinic, Osijek, Croatia

Corresponding author: ddegmecic@mefos.hr

Mental health is a state of mental well-being that enables people to cope with the stresses of life, realize their abilities, learn and work well, and contribute to their community. It has intrinsic and instrumental value and is a basic human right. Mental health exists on a complex continuum, which is experienced differently from one person to another. At any one time, a diverse set of individual, family, community and structural factors may combine to protect or undermine mental health. Although most people are resilient, people who are exposed to adverse

circumstances are at higher risk of developing a mental health condition. The mental health of medical students is a growing concern worldwide, with studies indicating high levels of stress, anxiety, and depression among this population. Studies estimated presence of burnout to be between 33.4% and 55% among medical students. Burnout is described in terms of three main components: emotional exhaustion, depersonalization or cynicism, and decreased sense of personal accomplishment. In this workshop we will talk about mental health issues, about burn out and we will provide some suggestions on how to improve mental health in academic setting.

Keywords: Burnout; Mental Health; Students

WORKSHOP
BRIDGING (DIGITAL) BURNOUT: MENTAL HEALTH AND RELATING IN EDUCATION

Silvija Šikić

University of Rijeka, University Counselling Centre, Psychological Counselling Rijeka, Croatia

Corresponding author: silvija.sikic@uniri.hr

In the digital era we live in, with stimuli overwhelming us on a daily basis, burnout and mental health have become common topics. In this workshop, we will explore our understanding of mental health as well as ways of dealing with burnout in the context of workplace and education. We will also look into which role relating to others and ourselves has in this process. The aim of the workshop is to broaden our understanding and active approach to mental health.

Keywords: Active; Principle Burnout; Education; Mental Health; Relating

Session C26.
KEYNOTE TRANSFORMATIVE SESSION: IN UNITY, THE FUTURE FINDS ITS STRENGTH

THE ROLE OF THE CROATIAN DIASPORA IN ADVANCING MEDICAL EDUCATION

Steven Pavletic, Jeana Havidich, Kreso Marusic, Lidija Ortloff, Maria Sentic, Boris Vilic

Association of Croatian American Professionals, Washington DC, United States of America

Corresponding author: pavletics@outlook.com

The definition and role of diaspora in advancing education and economic development in countries of origin have evolved significantly in the modern era. Diaspora refers to individuals residing outside their country of origin or those who maintain meaningful ties with their homeland. Croatia has one of the largest diasporas globally, representing a substantial and underutilized asset for national prosperity and economic growth. The medical sector accounts for nearly 20% of the U.S. economy and leads the world in medical innovation. Members of the highly educated Croatian American diaspora, along with graduates of Croatian medical schools, have made disproportionately large contributions to advancements in medicine and biomedical science. Croatia's longstanding tradition in medical education and public health presents a strategic opportunity for regional and EU-wide partnerships and leadership. The Association of Croatian American Professionals (ACAP), a U.S.-based nonprofit founded in 2014 with over 3,000 members, exemplifies the emerging role of national diasporas. Moving beyond traditional models of philanthropy and remittances, ACAP facilitates the transfer of technology, knowledge, and innovation. It provides critical infrastructure to sustain momentum in these areas. ACAP initiatives include annual lifestyle medicine symposia, fellowships and clinical exchanges, career development webinars, cancer control research, and wellness promotion. These programs incorporate rigorous metrics for delivery and academic productivity.

Notably, nearly all Croatian medical and biomedical postgraduates who engage with ACAP programs have returned to Croatia or expressed a desire to continue their work there. Key factors contributing to ACAP's success include a clear mission and vision, high standards, professionalism, altruism, volunteerism, transparency, diversity across professions, generations, and geography, as well as an apolitical and non-religious stance. ACAP's ability to bridge cultural gaps, manage expectations, foster community engagement, and collaborate with Croatian governmental agencies is supported by a strong organizational and governance structure.

Keywords: Associations; Diaspora; Economic Development; Innovation; Medical Education

PANEL DISCUSSIONS

TRANSFORMING EDUCATIONAL LITERATURE: TRENDS IN DIGITAL PUBLISHING

Nina Pereza[1,2], Lea Lazzarich[3], Sanja Kosić[3], Igor Eterović[4], Marko Dragić[5], Davorka Lulić[6,7]

[1] University of Rijeka, Faculty of Medicine, Centre for Improving Teacher Competencies and Communication Skills, Rijeka, Croatia
[2] University of Rijeka, Faculty of Medicine, Department of Medical Biology and Genetics, Rijeka, Croatia
[3] University Library of Rijeka, Rijeka, Croatia
[4] University of Rijeka, Faculty of Medicine, Department of Social Sciences and Medical Humanities, Rijeka, Croatia
[5] Croatian Medical Chamber, HeMED Platform, Croatia
[6] University of Rijeka, Faculty of Medicine, Department of Internal Medicine, Rijeka, Croatia
[7] Clinical Hospital Centre Rijeka, Clinic for Internal Medicine, Rijeka, Croatia

Corresponding author: nina.pereza@uniri.hr

This panel discussion convenes professionals from diverse domains who are engaged in the development, implementation, dissemination, and evaluation of contemporary digital learning resources. The session includes the presentation of two digital university editions: five textbooks in the methodology of medical education for medical teachers (*Modern and Practical Medical Education*), and two handbooks for performing basic clinical skills for medical students (*INTERMed project: Virtual Standardisation of Teaching and Learning Clinical Skills in Internal Medicine and Clinical Propedeutics*). In addition, through a series of thematically structured questions, panellists will critically examine all processes underlying the creation of digital educational editions. The discussion will address key stages of their development, including conceptualisation, technological design, video production, and platform selection, while also considering the pedagogical and organisational implications of integrating digital materials into higher education. Panellists will further reflect on student and teacher reception and perception, variations in expectations across user groups, and the institutional conditions that enable or constrain sustained innovation. The session will further highlight the critical importance of open scholarly books and freely accessible educational editions for equitable and sustainable academic practice. By juxtaposing experiences from voluntary, institutional, and commercially oriented production models, the session aims to illustrate the evolving landscape of academic publishing. Several overarching conclusions frame the dialogue. First, effective digital transformation of educational literature in higher education requires robust and coordinated institutional support, including centres for teacher education, university libraries with electronic-publishing units, and specialised IT support services. Second, the expansion of open digital educational editions represents an essential component of equitable and sustainable academic practice, enhancing accessibility and reducing financial barriers for learners. Third, rigorous verification and quality-assurance mechanisms are indispensable for maintaining the academic integrity and credibility of open materials. Finally, the panel underscores the need to establish an optimal balance between digital and printed editions, recognising that each format engages learners differently and supports distinct cognitive and pedagogical processes. Collectively, these insights contribute to a deeper understanding of current trends, challenges, and potential solutions, as well as help shape the future directions for digital scholarly publishing.

Keywords: Digital Publishing; Digital Transformation; Higher Education; Medical Education; Open Educational Resources; Scholarly Editions

TEACHERS OR TECH EXPERTS? IS MEANINGFUL DIGITAL TRANSFORMATION IN HIGHER EDUCATION POSSIBLE WITHOUT INSTITUTIONAL SUPPORT?

Nina Pereza[1,2], Goran Hauser[3,4], Tehseen Dossul[5], Zlatan Ibradžić[6], Juraj Bilić[7,8], Damir Medved[9]

[1] University of Rijeka, Faculty of Medicine, Centre for Improving Teacher Competencies and Communication Skills, Rijeka, Croatia
[2] University of Rijeka, Faculty of Medicine, Department of Medical Biology and Genetics, Rijeka, Croatia
[3] University of Rijeka, Faculty of Medicine, Department of Internal Medicine, Rijeka, Croatia
[4] Clinical Hospital Centre Rijeka, Clinic for Internal Medicine, Rijeka, Croatia
[5] Amboss Digital Learning Platform, Germany
[6] Queen Victoria Hospital, NHS Trust, Department of Burns and Plastic Surgery, East Grinstead, UK
[7] Assistant Director, Croatian Academic and Research Network (CARNET), Croatia
[8] OECD Expert on the Future of AI
[9] University of Rijeka, EDIH ADRIA director, Rijeka, Croatia

Corresponding author: nina.pereza@uniri.hr

As universities strive to modernise teaching and learning, the question remains whether meaningful digital transformation can occur without robust institutional support. This panel explores the widening gap between expectations placed on educators and the practical realities of implementing digital tools in higher education. Beginning with the issue of digital literacy, the discussion examines the mismatch between Generation Z learners and the pedagogical approaches of their teachers, emphasising the need for continuous professional development and a realistic understanding of what digital technologies can, and cannot achieve. The panel clarifies what "digital transformation" truly means, moving beyond basic LMS usage toward the creation and curation of high-quality digital content, the integration of AI into teaching, and the adoption of adaptive learning platforms. Through concrete examples from clinical education, large-scale educational projects, and national initiatives, speakers will illustrate the time, expertise, and organisational infrastructure required to sustain innovation. Attention will also be given to the gap between available institutional and national support systems and their actual uptake among teachers, raising questions about accessibility, training, and motivation. Ethical considerations in AI development, data privacy, responsible data sharing, and the challenge of navigating an oversaturated landscape of unverified digital content will also be addressed. A central theme of the panel is the human dimension of teaching: can all aspects of education truly be digitised, or do higher-order skills, professional identity formation, and the cultivation of values require fundamentally human interactions? The session concludes by emphasising the essential role of centralised and coordinated institutional support in driving meaningful digital transformation of higher education. This includes strengthening educators' digital literacy, providing methodological and didactic guidance, ensuring strong administrative and IT support, assisting in the development and maintenance of digital educational materials, selecting platforms with verified content, and establishing clear institutional and national guidelines for the adoption of emerging technologies, while recognising that not everything is digitally transformable.

Keywords: Digital Literacy; Digital Transformation; Faculty Development; Higher Education; Medical Education; Soft Skills

EXPLORING THE ROLE OF SIMULATION LABS IN THE FUTURE OF MEDICAL EDUCATION

Sebastjan Bevc[1], Janja Tarčuković[2], Magdalena Kurbanović[3]

[1] University of Maribor, Faculty of Medicine, Maribor, Slovenia
[2] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[3] University of Rijeka, Faculty of Health Sciences, Croatia

Corresponding author: sebastjan.bevc@ukc-mb.si

Simulation has become a cornerstone of contemporary medical education, serving as a structured interface between theoretical knowledge and its safe application in clinical practice. Yet, simulation should primarily be regarded as a pedagogical tool whose effectiveness depends on the quality of its design and contextual relevance. To maximize its educational potential, as with any learning method, every component of simulation-based education must be carefully designed, aligned, and standardized: clearly defined learning outcomes must correspond to appropriate teaching methodologies, assessment strategies must be developed to measure their attainment,

and educators (teachers, asistents, demonstrators, mentors, tutors) must be fully aware of their teaching responsibilities and expected outcomes. This process also requires adequate recognition of educator workload, since designing, delivering, and evaluating simulation sessions are resource-intensive tasks that demand both time and institutional support. Within this framework, the acquisition of core clinical and procedural skills forms the foundation upon which students from all healthcare professions gradually progress toward complex, scenario-based training that integrates cognitive, psychomotor, and communication competencies. Emerging technologies such as virtual and augmented reality further expand this continuum, bridging the current limitations of high-fidelity mannequins – particularly their inability to reproduce nuanced clinical signs such as changes in skin colour, emotional expression, or subtle behavioural cues. Moreover, the use of an AI-enhanced feedback system in simulations poses a significant additional challenge. When conceptualized and implemented through the principles of constructive alignment, simulation evolves from a standalone teaching activity into a coherent educational strategy that ensures vertical integration across learning, teaching, and assessment processes. This approach strengthens student competence and confidence, fosters patient safety, and promotes a culture of reflective, evidence-informed teaching practice. The panel will critically examine these aspects, addressing design principles, workload and faculty preparation, and the integration of novel technologies to redefine the role of simulation in the future of medical education.

Keywords: Clinical Competence; Medical Education; Patient Safety; Simulation Training

FLIPPED LEARNING UNPACKED: CHALLENGES AND SOLUTIONS

Vedran Katavić[1], Mirza Žižak[2], Janja Tarčuković[3,4], Davorka Lulić[5,6]

[1] University of Zagreb School of Medicine, Department of Anatomy and Clinical Anatomy, Zagreb, Croatia
[2] University of Zagreb School of Medicine, Office for E-learning, Zagreb, Croatia
[3] University of Rijeka, Medical Faculty, Department of Anaesthesiology, Resuscitation, Emergency and Intensive Care Medicine, Rijeka, Croatia
[4] Clinical Hospital Centre Rijeka, Department of Anaesthesiology, Intensive Care and Pain Medicine, Rijeka, Croatia
[5] University of Rijeka, Faculty of Medicine, Department of Internal Medicine, Rijeka, Croatia
[6] Clinical Hospital Centre Rijeka, Clinic for Cardiovascular Diseases, Rijeka, Croatia

Corresponding author: vedran.katavic@mef.hr

As higher education continues to evolve toward learner-centered teaching, flipped learning has become one of the most recognizable and widely discussed innovations in medical education methodology. By shifting the acquisition of theoretical knowledge outside the classroom and dedicating in-person time to interactive and problem-oriented learning activities, an appropriately structured flipped classroom model aligned with assessment strategies should lead to a deeper engagement with subject matter, a stronger integration of knowledge and enhanced critical thinking in students. However, its practical implementation within complex medical curricula has revealed numerous challenges, including those related to sustainability, educator workload, student motivation, effective alignment between teaching/learning activities and assessment methods, as well as the need for infrastructural and institutional support. The successful application of the flipped classroom model relies on careful instructional design, clearly defined learning outcomes, alignment between pre-class and in-class activities, and assessment. When complemented by digital learning tools such as interactive presentations and formative quizzes, this approach can help ensure that students actively engage with materials before class sessions. At the same time, a thoughtfully planned face-to-face instruction remains essential for developing higher-order cognitive skills, clinical reasoning, and teamwork. In medical education, the sustainability of flipped learning depends on maintaining quality and coherence across courses, providing sufficient time and support for educators to develop digital and interactive resources, and fostering a shared pedagogical framework across teaching staff. Continuous evaluation, feedback loops, and alignment of assessments with intended learning outcomes are critical to achieving measurable educational benefits. The panel will explore key aspects of flipped learning in medical education, including curriculum integration, balance between online and onsite learning, coordination and faculty support, as well as examples of assessment alignment. By discussing current practices and emerging evidence, it will aim to provide an overview of major considerations for institutions seeking to enhance teaching effectiveness and student engagement through the flipped classroom model.

Keywords: Active Learning; Educational Innovation; Flipped Classroom; Medical Education; Teaching Strategies

BETWEEN IDEALS AND REALITY: FACULTY DEVELOPMENT UNFILTERED

Valdi Pešutić-Pisac[1], Lynn Monrouxe[2], Nina Pereza[3,4], Tina Dušek[5,6], Petra Valković Zujić[7,8], Doris Ilic[9]

[1] University of Split, School of Medicine, Department of Pathology, Split, Croatia
[2] The University of Sydney, Faculty of Medicine & Health, School of Health Sciences, Professor of Healthcare Professions Education Research, Australia
[3] University of Rijeka, Faculty of Medicine, Centre for Improving Teacher Competencies and Communication Skills, Rijeka, Croatia[4]Faculty of Medicine in Zagreb, Croatia
[4] University of Rijeka, Faculty of Medicine, Department of Medical Biology and Genetics, Rijeka, Croatia
[5] University of Zagreb School of Medicine, Department of Internal Medicine, Zagreb, Croatia
[6] Department of Internal Medicine, Division of Endocrinology, University Hospital Center Zagreb, Zagreb, Croatia
[7] Clinical Hospital Center Rijeka, Department of Diagnostic and Interventional Radiology, Rijeka, Croatia
[8] Faculty of Medicine of the University of Rijeka, Department of Radiology, Rijeka, Croatia
[9] St. Joseph's University Medical Center, Emergency Department, Paterson, NJ, United States of America

Corresponding author: valdypp@gmail.com

Faculty development (FD) is often discussed in aspirational terms – innovation, lifelong learning, and continuous improvement – but its practical implementation varies widely across institutions and national contexts. This panel brings together educators from Croatia, Australia, and the United States to explore what happens when FD ideals confront real-world constraints, and how institutions can build meaningful, sustainable development cultures. Grounded in the Croatian experience – where "faculty development" is still emerging beyond its traditional framing as simple teacher training – the discussion opens with personal narratives of how each panellist first encountered the concept of FD and how it is understood within their institutional cultures. By contrasting these experiences with established models in Australia and the USA, the panel highlights the diversity of assumptions and expectations that shape FD practices. The conversation then moves into the friction between ideals and reality. Panellists unpack their experiences modernising teaching, navigating institutional culture, securing administrative support, and managing faculty workload and motivation. A spotlight is placed on the Centre for Medical Education at the Faculty of Medicine in Rijeka as an illustrative case of building FD capacity within a transitioning system – revealing both successes and "behind-the-scenes" challenges. Through comparative perspectives, the panel examines what "ideal" FD might look like and asks whether effective models should be imported, adapted, or designed locally from the ground up. Barriers at national, institutional, and individual levels are discussed candidly, emphasising the critical role of administration, leadership, and systemic support structures. The session concludes with action-oriented insights. Each panellist offers an "unfiltered truth" – a key lesson learned in their FD journey – followed by a synthesis that underscores that there is no one-size-fits-all model. Effective FD depends on context-sensitive strategies, empowered institutional structures, administrative commitment, and a shift from isolated training events toward cultural transformation. This panel invites participants to reflect on their own FD ecosystems, consider adaptable strategies, and engage in honest conversations about what it truly takes to translate educational ideals into institutional reality.

Keywords: Academic Leadership; Educational Innovation; Faculty Development; Institutional Culture; Medical Education; Teacher Education

CROATIAN PATHWAY TOWARDS WFME ACCREDITATION

Danijela Horvatek Tomić[1], Vlatka Sotošek[2], Katarina Vukojević[3], Boris Vilić[4], Davor Ježek[5]

[1] The Agency for Science and Higher Education, Zagreb, Croatia
[2] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[3] University of Split, School of Medicine, Split, Croatia
[4] National Board of Examiners, Philadelphia, Pennsylvania, USA
[5] University of Zagreb, School of Medicine, Zagreb, Croatia

Corresponding author: davor.jezek@mef.hr

Croatia's Agency for Science and Higher Education (ASHE) is working towards WFME Recognition to bring its national medical education accreditation in line with international standards. The WFME process – focused on self-evaluation, peer review, and observation of accreditation activities – acts as a developmental tool to enhance the quality, accountability, and global standing of medical programs. Achieving this recognition fosters ongoing

improvements and is supported by evidence linking robust educational and assessment practices to better patient outcomes. For all Croatian medical schools, acquiring WFME recognition would enhance internationalisation efforts, boost global visibility, and facilitate student and graduate mobility, including access to jobs worldwide for international students. Overall, obtaining WFME accreditation would promote international collaboration, attract more foreign students, and showcase the high standards of Croatian medical education.

Keywords: WFME; Accreditation; Medical Education; Internationalisation; International Students

SECOND INTERNATIONAL STUDENT SYMPOSIUM ON FUTURE DOCTORS EDUCATING THE WORLD

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LECTURES

Session S1. SYMPOSIUM SESSION 1

TUTORSHIP IN MEDICAL EDUCATION: EXPERIENCES AND PERCIEVED IMPACT AMONG STUDENTS AND TUTORS

Ula Vipotnik, Maša Marolt

University of Maribor, Faculty of Medicine, Maribor, Slovenia

Corresponding author: ula.vipotnik@gmail.com

Aim: Tutorship plays an important role in developing academic, professional and personal competences within the ever-evolving medical education. At the faculty of Medicine, University of Maribor, a two-level tutoring system has been implemented to provide continuous peer support throughout the preclinical and clinical years of study. The system consists of pre-clinical and clinical tutoring, further divided into introductory and subject-based tutoring, as well as internal medicine, surgical and family medicine tutorship. Tutors not only assist peers in academic and clinical trainings but also participate in regular teaching activities within the core subjects *Surgery* and *Internal Medicine with Propaedeutics*, where they conduct practical sessions. Moreover, tutors offer their own elective course, *Selected Topics and Innovations in Propaedeutics*, enabling students to further refine their clinical and communication skills under the guidance of peers and faculty members. Additionally, tutors organize events, such as Clinicfest, a two-day marathon of clinical skills, Mini Clinicfest for preclinical students, "*Where to after medical school?*", a career fair featuring medical specializations, and international workshops for Erazmus students. In addition, tutors engage in research and academic projects, having completed more than 90 student-led research projects and contributing two publications.

This contribution presents the structure, objectives and functioning of the tutoring system at our faculty and highlights its perceived benefits and challenges from the perspectives of both students and tutors.

Materials and Methods: A case-based descriptive approach analysed faculty reports, evaluation reports and feedback form, scientific output to evaluate and further evolve the tutoring system.

Results: Preliminary findings show introductory and subject-based learning supports students not only academically but also personally, facilitating their adaptation to university life. Clinical tutoring places emphasis on the development of professional identity, communication and practical clinical skills. Feedback suggests that students highly value peer support and the opportunity to strengthen teaching and leadership abilities. Moreover, clinical mentors appreciate the preparedness of students upon entering the clinical environment, as they have already practiced essential skills with their tutors.

Conclusion: The tutoring system provides structured support through medical education, strengthens collaborations, contributes to the development of communication, teamwork, and professional competences.

Keywords: Peer teaching; Student teaching; Tutoring

Session S2. SYMPOSIUM SESSION 2

SPARKING WONDER – TURNING KIDS INTO CURIOUS SCIENTISTS

Lucija Falamić

Josip Juraj Strossmayer University of Osijek, Faculty of Medicine Osijek, Osijek, Croatia

Corresponding author: lucija.falamic00@gmail.com

Section for Neuroscience Osijek is a subsection of the Croatian Society for Neuroscience, operating under the Department of Medical Biology at the Faculty of Medicine Osijek. The section consists of 35 members - medical and pharmacy students at the Faculty of Medicine Osijek - young enthusiasts and neuroscience lovers whose goal is to make this field tangible, engaging and accessible to the general public. Each year, we organise Brain Awareness Week in Osijek, filled with new creative ideas and activities for citizens of all ages. The favourite part of our audience is the youngest children, whom we visit in schools and kindergartens and organise competitions and special activities for. Our goal is to awaken curiosity and interest in science from the earliest age, as it stimulates brain development, builds crucial skills such as critical thinking and problem-solving, and fosters a lifelong love of learning.

It is well known that children learn, adapt, and create much more rapidly and easily compared to adults. The aim of this lecture is to provide a neuroscientific foundation for understanding how children's attention, motivation, and creativity are gained and maintained. Using examples from our long-standing practice, and evidence-based research, we'll try to offer concrete examples of an approach that nurtures children's potential for problem solving and out-of-the-box thinking and maintaining intrinsic motivation throughout development.

For future physicians, this knowledge can be particularly valuable in improving communication and therapeutic approaches towards the pediatric population, thereby contributing to better outcomes. Certain principles are applicable in enhancing creative thinking and learning among medical students, as well as in designing teaching methods that support creativity, effective encoding, and the development of long-term knowledge.

Keywords: Attention; Child Development; Learning; Neurosciences

Session S4. SYMPOSIUM SESSION 3

DO YOU THINK YOU CAN RECOGNIZE A ZEBRA? TAKE THIS RARE OPPORTUNITY AND THINK OUTSIDE THE BOX

Anamaria Yago, David Beck, Hrvoje Blažević

University of Zagreb School of Medicine, Students' Association for Rare Diseases Croatia, Zagreb, Croatia

Corresponding author: anamaria.messi10@gmail.com

In medical education, we are often told, "When you hear hoofbeats, think horses." Yet every so often, there is a zebra among them. Although each rare disease is uncommon, together they account for 6–8% of all diagnoses, affecting around 30 million people in the European Union alone, and pose a significant challenge to medical education. The Students' Association for Rare Diseases Croatia at the University of Zagreb School of Medicine was established to empower students to develop critical thinking, empathy, and interdisciplinary knowledge while raising awareness of the importance of rare disease recognition and research. This lecture presents the Association's comprehensive educational and volunteer-based approach to medical learning. Through systematic training of new volunteers in research and communication skills, a series of lectures inspired by patients' real-life experiences, the organisation of six multidisciplinary Student Conferences on Rare Diseases, and volunteering in the national Helpline for Rare Diseases, the Association promotes a holistic, patient-centred view of medicine. The activities also encourage engagement with current scientific literature and case reports, enabling students to expand beyond textbook knowledge and outdated frameworks. By integrating education, research, and advocacy, the Association helps future physicians cultivate curiosity, sensitivity, and adaptability – qualities essential

for diagnosing and managing rare conditions. This lecture highlights how student-led initiatives can enrich medical curricula and contribute to the long-term improvement of healthcare for patients with rare diseases.

Keywords: Awareness; Empathy; Medical Education; Rare Diseases; Students

Session S8. SYMPOSIUM SESSION 5

DIGNIFIED WORKPLACE LEARNING: CHALLENGES, CONSEQUENCES AND CULTURAL CHANGE

Lynn Monrouxe[1-5]

[1] The University of Sydney, Faculty of Medicine & Health, School of Health Sciences, Professor of Healthcare Professions Education Research, Australia
[2] Chang Gung University, Adjunct Professor of Medical Education, Taiwan (ROC)
[3] The University of Kelaniya, Adjunct Professor to the Department of Medical Education, Sri Lanka
[4] Frontiers, Frontiers in Medicine, Specialty Chief Editor for Healthcare Professions Education
[5] Wiley Blackwell, Medical Education, Deputy Editor

Corresponding author: lynn.monrouxe@sydney.edu.au

In her talk, Lynn will address workplace dignity as a fundamental, yet frequently violated, principle in healthcare education and practice. In doing so, she will draw on her extensive international research programme spanning nine studies across 18 countries with over 7,000 participants. Through vivid narratives from healthcare students' professionalism dilemmas during workplace learning – those daily events where learners witness or participate in something they believe to be unethical or wrong – she will demonstrate how dignity violations ripple through healthcare systems, affecting patients, students, healthcare professionals, and entire organisations.

Lynn will explore the conceptual challenges of defining workplace dignity from a multicultural perspective, positioning the workplace not merely as a transactional space but as a community where people create meaning in their lives. Using Jacobson's taxonomy and contemporary workplace dignity theory, she will examine how dignity manifests across personal, interpersonal, physical, and organisational dimensions, encompassing both dignity-of-self (damages to identity, violations of bodily integrity, affronts to moral agency) and dignity-in-relation (infringements on autonomy, status, and citizenship). Drawing on research evidence, Lynn will reveal the cascading consequences when dignity is breached: patient disengagement from care, learner professional identity threats and moral injury, and organisational costs with safety implications. Lynn will ultimately consider pathways toward cultural change and our collective responsibility in creating healthcare environments where the dignity affirmed in the Universal Declaration of Human Rights becomes lived reality rather than aspiration.

Keywords: Medical Education; Professionalism; Workplace Dignity

Session S9. SYMPOSIUM SESSION 6

ART THERAPY, HIPOKART SECTION

Lucija Obad, Klara Cifrek

University of Zagreb, Faculty of Medicine, Zagreb, Croatia

Corresponding author: lucijaobad700@gmail.com

HipokArt is a student section of the University of Zagreb School of Medicine dedicated to promoting creative and artistic expression among students. Its goal is to help them take their minds off everyday stress and obligations through creative work. Over the years, HipokArt has organized numerous workshops – including drawing, dance, and origami sessions, as well as social board game gatherings. These activities offer students an opportunity to relax, try out new hobbies, and meet new people in a friendly and open atmosphere.

One of the section's main areas of interest is art therapy. Recently, growing attention has been devoted to the question of whether art can contribute to the treatment of various illnesses – and if so, through which

mechanisms. Research has shown that engaging in art can help maintain both physical and mental health: it lowers stress hormone levels, enhances immune function, and improves emotional regulation. Moreover, it helps reduce feelings of loneliness and isolation, strengthens social skills, and fosters a sense of community and mutual support among workshop participants. Art therapy can take many forms, allowing everyone to find an activity that suits them – from music, drawing, and dance to visiting exhibitions or performances. Today, art therapy is used in working with individuals suffering from mental health conditions, as complementary care for patients with neurological disorders, and as a supportive approach in palliative care. The use of art therapy is steadily increasing both worldwide and in Croatia. In conclusion, art therapy represents a cost-effective and efficient therapeutic method that connects the mind, emotions, and body, making it an excellent complement to traditional forms of treatment.

Keywords: Art Therapy; Creativity; Mental Health; Psychological Stress; Social Support

Session S10. SYMPOSIUM SESSION 7

SENTINEL OF STUDENTS' MINDS: WHAT LIES BENEATH THE SURFACE – MEDICAL STUDENTS AND THE (IN)VISIBLE STRUGGLES

Petra Sertić[1], Lea Murn[2], Karla Zekulić[1], Ivan Remaj[3], Matea Bingula[4], Luka Linarić[5], Lucija Grbin[5]

[1] Department of Medical Oncology, Division for Medical Oncology, University Hospital for Tumors, University Hospital Center Sestre milosrdnice, Zagreb, Croatia
[2] Department of Psychiatry, Dubrava University Hospital, Zagreb, Croatia
[3] Zagreb County Health Center, Zagreb County
[4] Emergency Department, University Hospital Center Zagreb, Zagreb, Croatia
[5] University of Zagreb School of Medicine, Zagreb, Croatia

Corresponding author: petralinaric22@gmail.com

Aim: The aim of this presentation is to examine the mental health status of medical students through a dedicated survey and to highlight the psychological burden they experience during their training, as well as to present the results of the Sentinel Uma initiative and their implications for future support systems.

Materials and Methods: A cross-sectional, questionnaire-based survey was conducted among medical students, assessing stress, anxiety, depression, suicidal thoughts, burnout and experiences of unprofessional behaviour by teaching staff. The survey included 200 students from all six years of medical school. Standardised psychometric instruments were used, and quantitative findings were supplemented with qualitative insights that explored students' perceptions of the most demanding components of their academic environment.

Results: The surveyed cohort had an average age of 22 years and consisted predominantly of female students. More than one quarter of respondents reported suicidal thoughts during their studies, while alcohol consumption and the use of psychoactive substances were commonly reported. Female students demonstrated higher levels of depression, anxiety and stress, and emotional difficulties increased with academic progression. The highest stress and anxiety levels were found in third-year students, while those studying away from home showed greater emotional vulnerability. Indicators of burnout were elevated, especially emotional exhaustion, and cynicism increased with advancing study years. Unprofessional behaviour by teaching staff was frequently reported, particularly by students in the later years. More than 40% of respondents had sought psychological support. Qualitative comments emphasised high expectations, strong competitiveness, lack of faculty support, academic overload, perfectionism and challenges in maintaining a work-life balance as key stressors.

Conclusions: This questionnaire-based survey demonstrates a substantial mental health burden among medical students, shaped by academic pressure, institutional culture and insufficient preventive mental health education. The findings highlight the urgent need for systematic, accessible and stigma-free mental health support, including early screening, psychological services, faculty training, curriculum adjustments and resilience-building programmes. Strengthening preventive frameworks is essential to improve student well-being and protect the long-term sustainability of the future healthcare workforce.

Keywords: Anxiety; Burnout; Depression; Medical; Mental Health; Psychological; Stress; Students

WORKSHOP

Workshop session 1

WORKSHOP
I'M REALLY LISTENING! ACTIVE LISTENING AND THE ART OF QUESTIONING IN MEDICAL EDUCATION

Dorotea Kožnjak, Rea Kozeljac

University of Rijeka, Faculty of Medicine, Rijeka, Croatia

Corresponding author: dkoznjak@uniri.hr

In the dynamic and often high-pressure environment of medical education and clinical practice, effective communication forms the foundation of successful collaboration, knowledge transfer, and learner and peer support. Active listening and the ability to formulate meaningful questions are essential soft skills that foster understanding, trust, and deeper learning. This 60-minute interactive workshop is designed to strengthen the communication competencies of students, educators, and healthcare professionals through the practical application of active listening principles and the linguistic framework of the Meta Model from Neuro-Linguistic Programming (NLP).

The session begins with a brief experiential activity that allows participants to recognize the difference between passive and active listening. This is followed by a concise theoretical and practical overview of the core components of active listening – paraphrasing, summarizing, reflecting emotions, and the mindful use of nonverbal communication.

The central part of the workshop focuses on developing the skill of asking questions that open dialogue, encourage self-reflection, and minimize misunderstanding. Through structured exercises, participants analyse and practice different types of questions (closed, open, clarifying, and blocking), exploring their impact on the quality and flow of educational interaction.

The final segment introduces the Meta Model of language as a tool for precise questioning and message clarification. Working in small groups, participants learn to identify and reformulate common linguistic patterns of generalization, deletion, and distortion, thereby enhancing clarity and depth of communication. Each activity is grounded in experiential learning, supported by structured feedback and guided reflection.

Expected learning outcomes include: (1) increased awareness of the role of active listening in the educational process; (2) the ability to differentiate and apply effective question types; (3) understanding of the basic principles of the Meta Model; and (4) strengthened communication skills essential for educational and team-based work.

The workshop emphasizes practicality and immediate applicability of acquired tools in everyday professional interactions, promoting a culture of listening, understanding, and clear communication within medical education.

Keywords: Communication; Medical education; Skills

WORKSHOP
SPREAD THE KNOWLEDGE

Iva Grebenar, Helena Prgomet

University of Zagreb, Faculty of Medicine, Student Society for Infectious Disease

Corresponding author: sekcija.infektologija@gmail.com

Spread the Knowledge is an interactive workshop designed as a clinical case–based quiz. The session focuses on two relevant infectious disease cases presented through multiple-choice and open-ended questions aimed at assessing and expanding participants' knowledge. The primary goal is to promote education on common and significant infectious diseases while fostering teamwork and clinical problem-solving. Participants will engage in simulated real-life scenarios, progressing through all stages of patient management, from history taking and

physical examination to diagnostic procedures and therapeutic decisions in a competitive setting with prizes for top-performing teams. Each group will consist of up to five participants.

The Student Society for Infectious Disease, based at the School of Medicine, University of Zagreb, aims to popularise the field and educate future doctors in infectious diseases (a vital part of primary care) by providing practical and applicable knowledge and skills.

Since its founding in 2018, the Society has realised several projects, including "Volunteer at the Infectious Diseases Clinic" and the panel discussion "COVID – The Vaccine Explained Without Deceptions, Interests, and Delusions" (2020/2021), viewed by more than 6,500 people. In the first project, 42 medical students volunteered over 6,400 hours at the Dr. Fran Mihaljević University Hospital for Infectious Diseases during the epidemic peak, assisting in the care of nearly 20,000 patients, for which they received the University Rector's Commendation.

Since its inception, the Society has also continuously run "On Call at the Infectious Diseases Clinic", a mentorship-based project pairing each student with a clinician for an entire shift, preparing participants for future independent clinical work. Since 2021/2022, the Society has organised "Infect Yourself with Knowledge", a series of 17 thematic workshops featuring clinical cases from everyday practice, intended for students and young doctors.

It also collaborates with numerous student sections in organising lectures and symposia, including "Hepatitis Alphabet" (2023), "Paediatric Infectious Diseases" (2024), and "One Health. Zoonoses and Antibiotic Resistance: Challenges of the 21st Century" (2025).

Keywords: Diseases; Infectious; Knowledge

WORKSHOP
ABDOMINAL MAP: ORIENTATION THROUGH THE NINE QUADRANTS

Marta Pešut, Ivona Žuža

University of Rijeka, Faculty of Medicine, Rijeka, Croatia

Corresponding author: mpesut@student.uniri.hr

Aim is to present the Student Section for Internal Medicine, a student-led organisation dedicated to advancing clinical knowledge and practical skills among medical students through lectures, workshops, and case-based learning.

The workshop "Abdominal Map: Orientation Through the Nine Quadrants" explores the fundamentals of abdominal assessment using the nine-quadrant approach, focusing on anatomical landmarks, symptom localisation, and differential diagnosis. Through interactive discussions and clinical case analysis, students will learn to correlate abdominal pain and other key symptoms with potential underlying pathologies. The workshop will also include a detailed review of clinical assessments of each quadrant. Students will be able to identify possible pathological findings characteristic of specific abdominal regions, thereby gaining a comprehensive understanding of clinical evaluation and diagnostic reasoning in internal medicine.

Through this workshop, participants will have the opportunity to practice logical thinking and integrate information. In addition, this workshop provides a concise overview of the most common abdominal pathologies, making it an excellent review opportunity.

Keywords: Abdomen; Gastroenterology; Symptoms

WORKSHOP
MASTER THE STITCH: A HANDS-ON WORKSHOP IN ADVANCED SURGICAL SUTURING

Rea Krmpotić, Paulina Kušan, Lucija Glumac

University of Rijeka, Faculty of Medicine, Rijeka, Croatia

Corresponding author: rea.krmpotic@gmail.com

The aim of this workshop is to present The Student section for neurosurgery which brings together medical students from the University of Rijeka Faculty of Medicine who share a passion for neurosurgery and a strong motivation to develop clinical skills and deepen their knowledge in the field. Now in its third year, the Section

has hosted numerous engaging lectures and both basic and advanced surgical suturing workshops. It has also built collaborations with various student organizations and enabled students to volunteer and gain valuable hands-on experience at the Department of Neurosurgery, Clinical Hospital Centre Rijeka.

The Advanced Surgical Suturing Workshop, organized by the Student Neurosurgery Section, will provide medical students with the opportunity to acquire essential surgical skills required in the daily practice of future physicians. Through participation in this workshop, students will master the handling of surgical instruments and the tying of advanced surgical knots on realistic models, as well as gain insight into different types of surgical sutures and wound closure techniques.

Keywords: Education; Medical; Neurosurgical Procedures; Students, Medical; Suture Techniques

WORKSHOP
WE TREAT EVERYONE BUT OURSELVES: ON THE MENTAL HEALTH OF MEDICAL STUDENTS

Laura Lukačić, Ivana Krmelić

University of Zagreb, Faculty of Medicine, Zagreb, Croatia

Corresponding author: llukacic1@gmail.com

Medical students face high stress levels and mental health challenges yet often neglect their own well-being due to stigma and intense academic pressure. This workshop explores the mental health of medical students through four structured and interactive segments.

First, an anonymous interactive visual installation via Mentimeter invites participants to submit three words describing how they feel about medical school. The resulting word cloud reveals common emotions (e.g., stress, fear, anxiety, exhaustion), highlighting that they are not alone in their struggles. The second segment is an evidence-based overview of mental health among medical trainees, focusing on burnout, anxiety, depression, and suicidality. For example, a 2019 meta-analysis of 69 studies (over 40,000 students) found 33.8% of medical students experience significant anxiety – about triple the rate in the general population – with the highest prevalence in Asia and the Middle East. These findings underscore that mental health issues in this population are widespread yet often unrecognized and untreated, negatively impacting academic performance, empathy, and the quality of future patient care. The presentation emphasizes the urgent need to destigmatize mental illness in medical education and encourage help-seeking among students. The third segment is a brief guided auditory experience. Participants listen to a two-part audio track that contrasts the chaotic sounds of a medical student's typical day (alarms, hospital bustle, professor's test instructions, study sessions) with a calming sequence (guided breathing, meditation, soothing nature sounds). This exercise allows participants to observe their physiological reactions to stress versus relaxation, serving as an experiential "reset" and an introduction to mindfulness techniques for stress reduction. Finally, a collaborative discussion ("What can we change?") will identify key problems – chronic stress, excessive academic pressure, perfectionism/impostor syndrome, sleep disturbances, and stigma around seeking help – and explore possible solutions. Proposed interventions include social media campaigns to destigmatize mental health by sharing authentic personal stories, integrating mandatory mental health and resilience training into the curriculum (shifting from reactive to preventive care), ensuring accessible confidential counseling services, and routine monitoring of student well-being via surveys. This multifaceted workshop will help future doctors recognize the prevalence and impact of mental health issues among their peers, experience mindfulness as a coping tool, and be empowered to foster a culture of self-care and psychological support in medical education.

Keywords: Students, Medical; Mental Health; Burnout, Professional; Anxiety; Depression; Mindfulness

Workshop session 2

WORKSHOP
THE ART OF UNDERSTANDING: EXPLORING COMMUNICATION AND LITERACY IN PRIMARY CARE

Ida Štimac[1], Rene Peloza[1], Mihaela Marinović Glavić[2], Lovorka Bilajac[2,3]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] University of Rijeka, Faulty of Medicine, Department of Social Medicine and Epidemiology, Rijeka, Croatia
[3] Teaching Institute of Public Health Primorje – Gorski Kotar County, Rijeka, Croatia

Corresponding author: ida.stimac@gmail.com

The Student Section for Public Health focuses on promoting health and empowering individuals through public health actions and initiatives**.** One of its key missions is to assess and promote health literacy, defined as ability of individual to gain access to, understand and use information in ways which promote and maintain good health. It is not only personal competence: higher levels of health literacy has beneficial effect on social, economic and environmental determinants of health for the entire population. The results show that the average level of health literacy in Croatia is on the borderline between problematic and adequate. This highlights the importance of comprehensive communication between physicians and patients to ensure optimal healthcare outcomes. The workshop focuses on strengthening mutual understanding and communication between physicians and patients. According to best-practice guidelines, the main objective is to apply the "teach-back" method, a communication technique used to confirm that patients truly understand the information provided. The workshop will include several structured scenarios, representing different clinical situations: chronic disease management, medication adherence, and lifestyle modification. Through these simulated cases, participants will engage in practical exercises that reflect real-world situations, highlighting common challenges in physician–patient communication. Each scenario will encourage participants to identify bounderies to effective dialogue and explore strategies to overcoming them. During the workshop participants will gain experience in how structured conversation and good preparation can improve patient adherence, strenghten patient-physician relationship and improve clinical outcomes and overall wellbeing. Emphasizing interdisciplinary collaboration, the workshop is intended for all current and future healthcare professionals involved in patient care; including physicians, students, and other healthcare workers. By fostering clear, empathetic, and tailored communication, healthcare professionals can build trust, enhance patient adherence, and contribute to better clinical outcomes and overall well-being. In addition, proficient communication and understanding of health literacy are fundamental elements of high- quality healthcare and remain central objectives within clinical practice and public health initiatives.

Keywords: Communication; Health Literacy; Public Health

WORKSHOP
SECTION FOR ENDOCRINOLOGY AND DIABETOLOGY

Antonija Gračanin[1], Josipa Vlahović[1], Ivana Kraljević[1,2]

[1] University of Zagreb, Faculty of Medicine, Zagreb, Croatia
[2] University Hospital Center Zagreb, Department of Endocrinology, Diabetes and Metabolic Diseases, Zagreb, Croatia

Corresponding author: antonijagracanin@gmail.com

Aim of this workshop is to present the most common cases of endocrine emergencies.

The Student Section for Endocrinology and Diabetology is a section of the Faculty of Medicine, University of Zagreb since 2023, whose goal is to deepen knowledge in the field of internal medicine with an emphasis on endocrinology and diabetology. Through interesting clinical cases led by mentors, various endocrinological disorders and emergencies are discussed, and outpatient clinic visit workshops are organized with the possibility of improving practical skills. In addition to activities organized for students, the section organizes public health campaigns in which members of the section strive to prevent the development of diabetes and educate about the risks of the disease, enable early diagnosis and timely treatment.

The workshop ' Endocrinology Emergencies' is an interactive workshop that will present, through case studies, endocrinological conditions that often appear in family medicine clinics and emergency departments. Workshop participants will discuss therapeutic options for each individual case in small groups and then work together to discuss the patient's presentation and individual therapeutic procedure in detail. The goal of this workshop is to educate future physicians about the most common endocrinological conditions in practice that each of us may encounter in the near future.

Keywords: Adrenal crisis; Diabetic ketoacidosis (DKA); Endocrine emergencies; Hypoglycemia

WORKSHOP
PATH TO THE DROP: INTRODUCTION TO VENOUS ACCESS FOR BLOOD DONATION

Lana Bermanec, Tamara Bobić

University of Zagreb, Faculty of Medicine, Zagreb, Croatia

Corresponding author: sekcijazatransfuzijskumedicinu@gmail.com

The aim of this workshop is to present the work of our Student Section for Voluntary Blood Donors and Transfusion Medicine and to show the long path a blood bag takes from donor to patient. A practical lesson on determining blood types is also included in this workshop as it is one of the vital parts of blood analysis. We seek to enhance medical education by combining theoretical knowledge with hands-on experience, fostering both professional competence and social responsibility among future healthcare professionals. Our Student Section currently includes 15 active members and has organized 23 voluntary blood donation drives, collecting over 1,000 units of blood to date. Through our ongoing activities, we aim to promote awareness of the importance of blood donation and provide medical students with practical knowledge related to transfusion medicine. In this workshop, we want to show an overview of how blood donation drives are organized, followed by a short lecture on the donation process, blood processing and storage, and the clinical uses of donated blood. Participants will also be introduced to the work and goals of our Section. In the practical component of the session participants will have the opportunity to determine their own blood groups.

Keywords: Blood Donation; Venipuncture; Transfusion Medicine; Blood Preservation; Medical Education

Workshop session 3

WORKSHOP
ESCAPE THE AMBULANCE

Jana Skender, Ivana Kulišić

University of Zagreb, Faculty of Medicine, Zagreb, Croatia

Corresponding author: jana.skender@gmail.com

The Section for Pharmacology and Toxicology of the Faculty of Medicine, University of Zagreb was established last academic year with the aim of connecting theoretical knowledge with clinical practice. Through interactive workshops, lectures and case studies, students deepen their understanding of the effects of drugs and toxic substances and develop critical thinking in the approach to rational pharmacotherapy. The section encourages interdisciplinary collaboration, research and professional development of students interested in clinical pharmacology and toxicology.

The workshop participants are divided into teams. Each group is assigned clinical cases with infectious or internal medicine conditions. In each case, the participants encounter difficulties such as allergic reactions to antibiotics, drug side effects, antibiotic resistance or drug interactions. The goal is to resolve all clinical cases as quickly and accurately as possible.

This workshop significantly contributes to the development of clinical thinking and decision-making in real-life situations. Participants learn to apply theoretical knowledge from infectology and internal medicine to concrete clinical cases. The team approach encourages a multidisciplinary approach, which contributes to the development of clinical judgment, therapeutic decision-making and rational treatment selection.

Keywords: Anti-Bacterial Agents; Drug Interactions; Drug-Related Side Effects and Adverse Reactions; Infection; Internal Medicine

WORKSHOP
BASIC LIFE SUPPORT - STUDENT SECTION FOR EMERGENCY MEDICINE

Marijana Lasić, Katarina Vidović

University of Mostar, Faculty of Medicine, Mostar, Bosnia and Herzegovina

Corresponding author: marijana.lasic@mef.sum.ba

The Student Section for Emergency Medicine at the Faculty of Medicine, University of Mostar, was founded in 2019 with the goal of promoting emergency medicine knowledge and practical competence among medical students. Through structured workshops, simulations, and community engagement, the section supports early development of professional skills relevant to emergency care.

Basic Life Support (BLS) represents a fundamental component of resuscitation and is essential for all healthcare professionals. The workshop introduces participants to key elements of BLS in accordance with the European Resuscitation Council (ERC 2021) guidelines, focusing on recognition of cardiac arrest, activation of the Chain of Survival, and delivery of high-quality chest compressions and ventilations.

Participants learn the BLS algorithm, appropriate use of an automated external defibrillator (AED), and principles of effective team communication. Practical training is conducted through scenario-based simulations supervised by trained student instructors.

Simulated cases provide participants with experience in rapid assessment, maintaining compression quality under pressure, and coordinating within a resuscitation team. Emphasis is placed on early recognition, timely AED use, and the importance of continuous skills reinforcement. The workshop aims to improve preparedness for responding to cardiac arrest in both clinical and public settings, ultimately contributing to better patient outcomes.

Keywords: Basic Life Support; CPR; Emergency Medicine; Medical Education

WORKSHOP
SPIROMETRY WORKSHOP FOR MEDICAL STUDENTS

Jelena Šupraha, Leonarda Šmigmator

University of Zagreb, Faculty of Medicine, Zagreb, Croatia

Corresponding author: jelena.supraha@gmail.com

The aim of this workshop is to provide medical students with a practical understanding of the basic principles and interpretation of spirometry, as well as to develop essential skills for performing and analysing pulmonary function tests.

The Student Section for Pulmonology at the University of Zagreb School of Medicine is dedicated to educating students interested in further development of their knowledge and skills in the field of pulmonology. On a monthly basis, the Section organizes workshops, lectures, panel discussions, and educational activities, utilising social media to focus on the latest advancements in pulmonology. The Student Section for Pulmonology is also the founder of the project MediFER, established in collaboration with students from the Faculty of Electrical Engineering and Computing in Zagreb. MediFER is a project that connects medicine and technology, having been awarded the Rector's Award for socially beneficial work within the academic and broader community.

The workshop "Spirometry 101" was organised for medical students as part of the second International Student Symposium "Future Doctors Educating the World". Following a short theoretical introduction on respira-

tory mechanics, participants had the opportunity to analyse the provided spirometry reports and explain individual pulmonary function parameters.

Spirometry workshops serve as an effective educational tool for medical students, linking theoretical knowledge with practical skills. These types of activities can enhance understanding of respiratory physiology and stimulate interest in the clinical application of spirometry.

Keywords: Spirometry; Medical education; Respiratory function tests; Clinical skills

WORKSHOP
LEARNING THE BASICS: PRIMARY WOUND CARE AND SUTURING CLASS

Ivan Obradović, Domagoj Batinić

University of Mostar, Faculty of Medicine, Mostar, Bosnia and Herzegovina

Corresponding author: ivan.obradovic@mef.sum.ba

The aim of this workshop is to present the Surgical Student Section in the Faculty of Medicine, Mostar, established to prepare medicine and dental medicine students for practical skills**.**

The Surgical Student Section was established to prepare medical and dental students for practical work in surgical courses. Our goal is to familiarize students with the basic surgical instruments and techniques they will encounter during the clinical phase of their studies. Through organised workshops, the section focuses on developing essential surgical skills, including primary wound care, suturing, knot-tying, local anaesthetic application, and other relevant techniques. These workshops provide students with the opportunity to practice and refine their skills in a controlled environment under the supervision of experienced professionals. The section is actively supported by students and volunteer doctors, who contribute to the quality of education and mentor students throughout the process. We hope that participants in our workshops will gain confidence in their abilities, reduce the anxiety often associated with clinical courses, and enhance their practical skills before facing real-world clinical challenges.

Keywords: Sutures; Suture Techniques; Surgical Wound; Wound Closure Techniques

WORKSHOP
„RISTART" YOUR HEART: STUDENTS TEACHING LIFESAVING SKILLS

Mara Paravić, Lea Cofek

University of Rijeka, Faculty of Medicine, Rijeka, Croatia

Corresponding author: mparavic@uniri.hr

RiStart is an educational project organised by the Student Council of the University of Rijeka and implemented by medical students of the Faculty of Medicine, with the support of the Rijeka branch of the Croatian Medical Chamber. Established in 2019, the project aims to improve public health literacy by teaching Basic Life Support (BLS) procedures and the use of Automated External Defibrillators (AED) to non-medical participants.

The workshop is structured to ensure both understanding and practical mastery. It begins with a concise theoretical introduction that highlights the importance of early recognition and intervention in cardiac arrest, as well as the basic principles of first aid and the chain of survival. A live demonstration of resuscitation techniques follows, allowing participants to visualise each step of the process in real-time. The central part of the session focuses on hands-on training, where participants actively practice cardiopulmonary resuscitation (CPR) and AED use on manikins under the supervision of trained student instructors, who provide individualised feedback and correction. This interactive, learner-centred approach promotes confidence, critical thinking, and skill retention, enabling participants to respond effectively in real-life emergencies before professional help arrives.

According to the European Resuscitation Council (ERC), only 8% of patients survive out-of-hospital cardiac arrest, and bystander BLS is initiated in merely 58% of cases. As early BLS can double or even quadruple survival rates, there is a clear need for greater public education and awareness. Through RiStart, medical students play an

active role in community health promotion while developing their own teaching and communication skills. The project cultivates empathy, responsibility, and professionalism among future doctors, empowering citizens and building a society where everyone is capable of saving a life.

Keywords: Cardiopulmonary Resuscitation; Education, Medical; Heart Arrest; Public Health

Workshop session 4

WORKSHOP
STEPP INTO TRAUMA: NAVIGATING TRAUMA SCENARIOS

Nina Beluhan, Ana Lovrić, Lara Maričić, Andro Petrović, Jana Šinka, Anja Žužul

University of Zagreb, Faculty of Medicine, Zagreb, Croatia

Corresponding author: stepp.fast@gmail.com

Since its establishment in 2009, StEPP has been dedicated to empowering medical students to prepare their peers for future roles within emergency medical teams. In line with this mission, this workshop aims to equip participants with essential competencies for the initial assessment and pre-hospital management of severely injured trauma patients.

Effective trauma care requires rapid recognition and treatment of life-threatening conditions while maintaining a systematic approach to avoid critical oversights. To facilitate this, participants are introduced to the structured and logical trauma assessment algorithm, commonly referred to as the *"DR ABCDEFGH"* mnemonic. This framework enables healthcare professionals to promptly identify and manage life-threatening injuries, then address secondary issues in a comprehensive and organised manner.

The workshop will commence with a simulation scenario in which StEPP instructors, portraying an emergency medical team (physician, medical technician, and ambulance driver), demonstrate the practical application of the trauma algorithm in real time. Following the demonstration, instructors will review each component of the algorithm in detail, clarifying its clinical significance and implementation. Participants will then have the opportunity to individually practice the algorithm and associated emergency procedures under instructor supervision. In the second part of the workshop, participants will form their own emergency teams to apply the knowledge they have acquired in simulated trauma scenarios developed by the StEPP team. Through guided, hands-on experience, participants will assume various professional roles, make clinical decisions, and receive immediate feedback from instructors.

The workshop will conclude with a summary of key take-home messages and practical insights designed to reinforce learning outcomes and encourage participants to integrate these skills into their ongoing medical education and future clinical practice.

Keywords: Clinical Competence; Education; Emergency Medicine; Multiple Trauma

WORKSHOP
"SCAN ESCAPE – CAN YOU OUTSMART THE RADIOLOGIST'S MIND?"

Natalija Frančin, Leona Ostojić, Ana Vučaj, Ana Šmit, Marija Barbarić

University of Rijeka, Faculty of Medicine, Rijeka, Croatia

Corresponding author: natalija.francin1@gmail.com

Aim: to bring radiology closer to students in an engaging and playful way – combining teamwork, clinical reasoning, and quick thinking.

Designed as a light-hearted break from lectures, it allows participants to experience radiologic problem-solving through interactive challenges. Students are divided into four groups of five, each participating in a 15-minute round of the Radiology Escape Room. With group rotations, the entire workshop fits neatly into a

90-minute session. The storyline places teams in a medical emergency: a patient awaits surgery, but the final radiology report has gone missing. To retrieve it, students must progress through a series of tasks – matching X-rays to clinical cases, uncovering hidden clues under UV light, arranging CT and MRI images in the correct order, and finally revealing the diagnosis. Each stage encourages collaboration, communication, and critical thinking while showing that radiology is more than image interpretation – it's a field of discovery, teamwork, and problem-solving under pressure.

Keywords: Clinical; Diagnosis; Magnetic Resonance Imaging; Radiology

WORKSHOP
STRAIGHT TO THE LINE: ULTRASOUND IN VASCULAR ACCESS

Tin Plaftak[1], Mirela Kolak[1], Daniela Bandić Pavlović[1,2]

[1] University of Zagreb, Faculty of Medicine, Zagreb, Croatia
[2] University Hospital Centre Zagreb, Clinic for Anesthesiology, Reanimatology, Intensive Care and Pain Management, Zagreb, Croatia

Corresponding author: stud.anest.sekcija@gmail.com

Aim: The workshop aims to provide students with a comprehensive understanding of ultrasound-guided techniques – a rapidly evolving skill set often referred to as "the next stethoscope" for clinicians.

The Student Section for Anesthesiology has been an active entity at the University of Zagreb School of Medicine for many years. We organise lectures on a wide range of topics in this field, delivered by leading experts with extensive clinical experience. In addition, we host clinical skills workshops that focus on competencies essential for students at the start of their medical careers and during future specialisation, including Advanced Life Support, the use of the Oxylog in pre-hospital emergency medicine, airway management, and establishing peripheral and central venous access. To raise public awareness of the importance of prompt resuscitation initiation, we organise Basic Life Support workshops in secondary schools. We also regularly participate in student and professional congresses, contributing through hands-on workshops and clinical case presentations. This workshop offers an in-depth exploration of ultrasound-guided procedures, with a focus on peripheral and central venous catheterisation. It begins with an introductory lecture that covers the fundamental principles, techniques, and safety aspects of these essential skills, emphasising precision, good clinical practice, and patient safety. Ultrasound provides real-time, point-of-care and high-resolution imaging that enhances diagnostic accuracy and procedural success, allowing for safer and more precise interventions in clinical practice. By the end of the workshop, participants will have gained practical experience in using ultrasound to guide venous access and accurately place central venous catheters.

Keywords: Central Venous Catheters; Education; Ultrasonography

Workshop session 5

WORKSHOP
THE CASE CHRONICLES

Tiyya Selimović, Evelin Abdić, Filip Jurković, Ines Žitko, Rea Divjanović, Nina Pereza

University of Rijeka, Faculty of Medicine, Rijeka, Croatia

Corresponding author: tiyya.se@gmail.com

The Student Section of Medicina Fluminensis, the official journal of the Croatian Medical Association – Rijeka Branch and the Faculty of Medicine in Rijeka, was founded in 2017 to support and encourage student engagement in scientific research. Since then, the Section has developed a wide range of activities that promote student research and participation on both national and international levels. Through its unique educational formats, the Section provides students with hands-on experience, guidance and training in research methodology, case report writing and active involvement in scientific meetings.

This workshop introduces participants to the key principles of identifying, structuring, and publishing high-quality case report abstracts, as well as using medical tools and online databases for effective literature searches. Participants will work in small groups, where they will critically analyze sample abstracts, identify common mistakes, learn strategies to address them and review the cases. The aim is to help students overcome the common challenges and fear often associated with writing case report abstracts. This kind of interactive format enhances critical thinking, scientific communication and teamwork skills while fostering interdisciplinary collaboration.

Keywords: Case Reports; Students, Medical, Teaching Methods; Teamwork

WORKSHOP
MASTER THE KNOT

Anamarija Tubikanec, Magda Horvat

University of Zagreb, Faculty of Medicine, Zagreb, Croatia

Corresponding author: anamarijatubikanec@gmail.com

The aim of this review is to present the concept, structure, and educational significance of the Student Surgical Society at the University of Zagreb.

The Student Surgical Society at the University of Zagreb has a long-standing tradition of promoting surgical education through practical, student-led courses. Among its initiatives, the "Master the Knot" workshop stands out as a comprehensive program designed to teach and refine surgical knot-tying techniques, an essential component of operative competence. Surgical knot tying is a fundamental skill in all operative disciplines, ensuring tissue integrity, proper wound healing, and the prevention of postoperative complications. The workshop combines theoretical instruction with intensive, stepwise practical training. In the introductory segment, students attend a brief interactive presentation that covers the principles of knot security, tension control, and ergonomics in instrument handling. During the practical part, a two-level learning model is implemented. In the first phase, participants practice basic hand and instrument knots using thick cords to develop coordination and understand knot mechanics. In the second phase, they advance to using surgical thread and gloves, simulating real operating room conditions. Training is supported by original video materials and the standardised Dinsmore nomenclature, ensuring clarity and consistency in the learning process. Each student works at an individual workstation with dedicated supervision, enabling personalised feedback and effective skill development. The workshop consistently receives positive evaluations from participants, who report increased manual dexterity, precision, and confidence in performing surgical tasks. By integrating simulation-based learning and peer-to-peer mentorship, "Master the Knot" fosters a deeper understanding of surgical technique and promotes active, experiential learning. Future improvements will include expanding the range of knot types taught and introducing structured assessments to further enhance educational outcomes.

Keywords: Education, Medical; Surgical Procedures, Operative; Suture Techniques; Teaching Materials; Wound Healing

WORKSHOP
ACUTE POISONINGS"

Slavica Katić, Ivana Kosorčić, Marijana Goluža

University of Mostar, Faculty of Medicine, Bosnia and Herzegovina

Corresponding author: slavica.katic@mef.sum.ba

The PHARMiON Student Section operates at the Faculty of Medicine, University of Mostar, and is the first such section at this faculty. It was founded in 2018 with the aim of promoting students' interest in pharmacology, immunology, and scientific research. We offer a variety of lectures and workshops, with the primary goal of our Section being to provide additional clinical and pre-clinical education, as well as research opportunities.

The "Acute Poisonings" workshop is designed to present young doctors with the most common examples of poisonings and how to respond to them, ultimately saving human lives – a scenario that doctors often encounter in their practice. Within this workshop, we aim to review the basics of the action of certain drugs, the symptoms of their overdose, and teach students how to react in emergency situations. At the end of the workshop, participants should be able to:

1. Describe the mechanism of action of certain substances
2. Recognize the symptoms of overdose
3. Know how to react in case of an overdose

The workshop will be divided into a theoretical and a practical part. The duration of the theoretical part will be 20–30 minutes. The practical part consists of interactive case studies. The duration largely depends on the students' activity. On average, it can last between 30–40 minutes.

Keywords: Poisoning; Drug Overdose; Pharmacology; Education, Medical

WORKSHOP

BASIC AND ADVANCED LIFE SUPPORT MEASURES IN THE PEDIATRIC POPULATION – FROM THEORY TO PRACTICE

Petra Bolt[1], Iva Mandić[1], Jurica Vuković[1,2]

[1] University of Zagreb, Faculty of medicine, Zagreb, Croatia
[2] Clinical Hospital Center Zagreb, Department of Pediatrics, Zagreb, Croatia

Corresponding author: petra.bolt@gmail.com

The Student Section for Pediatrics at the University of Zagreb School of Medicine has been active since 2012, continuously organizing various workshops and lectures in the field of pediatrics for both medical and non-medical students. We are especially proud of our annual Humanitarian Christmas campaign, which we are organising for the 13th consecutive year. Each year, we collect gifts for children who spend the holidays in hospitals, hoping to make their stay a little brighter. The gifts are collected in primary and secondary schools across Zagreb, as well as through donations from different firms and associations. We also organise charity pub quizzes, and all participation fees are used to purchase gifts for children and/or equipment for pediatric hospital wards in Zagreb.

This workshop focuses on acquiring fundamental knowledge and practical skills in Basic Life Support (BLS) and Advanced Life Support (ALS) for children. In the theoretical part, participants will be introduced to the specific aspects of pediatric resuscitation, key differences compared to adults, the most common causes of cardiac arrest in children, and the BLS and ALS algorithms.

The practical part will take place using an infant-sized resuscitation manikin (representing a 6-month-old), in small rotating groups. Emphasis will be placed on teamwork, correct assessment of vital functions (using the ABC algorithm), high-quality chest compressions, and effective artificial ventilation. Participants will work through several simulated emergency scenarios, such as a child losing consciousness, and practice following the BLS protocol after assessing ABC. The workshop will also include a scenario on how to respond when a child chokes on a foreign body.

The workshop is intended for senior medical students, young doctors, and other healthcare professionals to help them prepare for real-life pediatric resuscitation situations. Many students and young clinicians report that pediatric resuscitation is one of their greatest fears, which is why learning and regularly revising BLS and ALS protocols for children is essential. Educating healthcare professionals and students on timely and appropriate reactions greatly increases the chances of survival and recovery in such critical situations.

Keywords: Cardiopulmonary Resuscitation; Education; Emergency Treatments; Pediatric Emergency Medicine

POSTERI

S3. POSTER SESSION 1

CASE REPORT: OVARIAN MASS DURING PREGNANCY

Natalija Volgemut[1], Lara Žubrinić[1], Alemka Brnčić Fischer[1,2], Marko Klarić[1,2]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] Clinical Hospital Center Rijeka, Department of Gynecology and Obstetrics, Rijeka, Croatia

Corresponding author: nvolgemut@uniri.hr

Aim: Ovarian cysts in pregnancy present a clinical challenge, as they can be asymptomatic or cause symptoms ranging from mild discomfort to acute complications. While most functional cysts resolve spontaneously, some may persist, grow, or lead to complications such as torsion, rupture, or compression of surrounding structures. Another challenge is choosing the right time for intervention, as fetal organogenesis ends by the twelfth week of pregnancy. Before then, operative procedures are not recommended due to possible teratogenic effects of anesthetics. In advanced pregnancy, laparoscopic surgery is challenging due to the gravid uterus limiting abdominal cavity. The aim of this case report is to highlight the importance of early recognition, appropriate management, and optimal timing of intervention to ensure the best outcomes for both mother and child.

Case report: A 21-year-old patient presented to the Perinatal Medicine Clinic for a gynecological examination. This is her first pregnancy. Based on the last menstrual period, the gestational age was calculated as 12+3. The patient reported having trouble urinating at 10 weeks of gestation, which improved by the next gynecological check-up. Ultrasound examination confirmed a single intrauterine fetus with a CRL of 67 mm and a rhythmic fetal heartbeat. A 110x61 mm anechoic cystic formation with smooth walls was detected anterior to the uterus and above the bladder. Additionally, the tumor marker CA 125 was elevated to 77.5 U/mL. The patient was indicated for laparoscopic cystectomy. During surgery, the gravid uterus was visualized, along with a 10cm cyst on the left ovary. The cyst was aspirated, its contents sent for cytological analysis, and the entire mass was removed. Histopathological analysis confirmed a benign serous ovarian cyst. Postoperatively, the patient remained afebrile and asymptomatic. Laboratory findings revealed mild anemia and leukocytosis, interpreted as a stress response to surgery. During hospitalization, she received Clexane and Utrogestan, and upon discharge, she continued Utrogestan and iron supplements. At the 21-week follow-up ultrasound, normal fetal morphology was confirmed, and the pregnancy progressed without complications.

Conclusion: Ovarian cysts in pregnancy pose a diagnostic and therapeutic challenge, especially in distinguishing benign from potentially malignant formations and assessing their impact on pregnancy outcomes. While most cysts detected early in pregnancy are functional and regress spontaneously, larger or complex cysts may require monitoring or surgical intervention. Early recognition is crucial for managing progression and optimizing patients' outcomes.

Keywords: Laparoscopy; Ovarian cysts; Pregnancy; Tumor biomarkers

CONTRASTING EMOTIONAL STRESSORS LEADING TO TAKOTSUBO CARDIOMYOPATHY – A CASE REPORT

Paulina Kušan[1], Ana Petretić[2]

[1] Faculty of Medicine, University of Rijeka, Rijeka, Croatia
[2] Clinic for Cardiovascular Diseases, University Hospital Center Rijeka, Rijeka, Croatia

Corresponding author: pkusan@student.uniri.hr

Aim: To highlight the role of emotional stressors in the onset of Takotsubo cardiomyopathy and the importance of psychosocial history in clinical reasoning.

Case report: A 76-year-old actress presented to the emergency department (ED) with persistent dyspnea and chest pain. Symptoms began a day before her visit to the ED, after receiving a lifetime achievement award. The

pain was initially localised substernally, later radiating to her neck and persisting despite diazepam and paracetamol. From her previous medical records, the patient is treated with valsartan and atorvastatin for arterial hypertension and hyperlipoproteinemia. Moreover, she is an oncology patient, currently under immunotherapy treatment with pembrolizumab for lung adenocarcinoma and primary renal carcinoma. On physical examination, the patient was alert and responsive, with a normotensive blood pressure (105/75 mmHg), stable respiratory rate, a rhythmic pulse (90 bpm) and normal findings on heart and lung auscultation. Laboratory records revealed elevated levels of troponin I (3819.8 ng/L) and NT-proBNP (4424 ng/L), and electrocardiogram (EKG) recordings showed negative T waves in D1, D2, D3, V4-V6 leads and biphasic T waves in V2-V3. An emergency transthoracic echocardiography was performed, revealing a significant systolic dysfunction of the left ventricle due to apical ballooning, prompting further imaging. Computed tomography pulmonary angiography excluded a pulmonary embolism. To rule out a coronary obstruction, the patient was transferred to the catheterization laboratory for an urgent coronary angiography, revealing a normal coronary angiogram. With coronary and thromboembolic disease excluded, a diagnosis of Takotsubo cardiomyopathy was established. The patient was admitted to the Intensive Cardiac Care Unit, where she was hemodynamically monitored and treated with gastroprotection, thromboprophylaxis, bisoprolol and ramipril together with torasemide and symptomatic therapy. During hospitalization, the patient disclosed having attended a friend's funeral a day before her award ceremony, indicating dual emotional stressors as potential triggers. Her condition gradually improved, as well as the systolic function of the left ventricle. She was discharged from the hospital after seven days.

Conclusion: Takotsubo cardiomyopathy remains a great example of a close connection between heart and mind. While often connected to distress and grief, positive emotions can also be a powerful trigger. As a diagnosis of exclusion, Takotsubo can closely mimic acute coronary syndrome or pulmonary embolism, making a thorough workup essential to avoid misdiagnosis and ensure appropriate and timely care.

Keywords: Acute Coronary Syndrome; Coronary Angiography; Echocardiography; Takotsubo Cardiomyopathy

A DEVELOPMENTALLY DELAYED NEONATE WITH GENERALIZED MUSCULAR HYPOTONIA AND NONSPECIFIC MALFORMATION SIGNS – A RARE CASE REPORT OF A PATIENT WITH CARDIOFACIOCUTANEOUS SYNDROME

Lena Hitrec[1], Kristina Franjić[2], Katja Gavrić[3], Arijan Verbić[4], Ana Milardović[4]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] Clinical Hospital Center Rijeka, Department of Clinical Microbiology, Rijeka, Croatia
[3] Krankenhaus der Elisabethinen, Krankenhaus der Barmherzigen Brüder St. Veit an der Glan, Klagenfurt, Austria
[4] Clinical Hospital Center Rijeka, Department of Pediatrics, Rijeka, Croatia

Corresponding author: lhitrec@uniri.hr

Aim: Cardiofaciocutaneous (CFC) syndrome is a rare autosomal dominant genetic disorder caused by mutations in the Ras/MAPK signalling pathway. To date, around 690 cases of CFC syndrome have been reported in the literature. Here, we report a patient with the V487G variant of the *BRAF* gene who acquired distinctive facial dysmorphic features with age. We aim to provide references to help future clinicians in making a timely diagnosis.

Case report: A male infant was born prematurely in the 30th week of gestation. The course of pregnancy was complicated by polyhydramnios. At birth, low-set ears, generalised muscular hypotonia, hyperreflexia with clonus, and an inguinoscrotal hernia on the right side were noted. The skin was hyperkeratotic and ichthyotic, prone to infection, and showed numerous nevi, hemangiomas, and eczema. The nails were wide and dystrophic. After birth, the newborn was treated for respiratory distress syndrome with exogenous surfactant, accompanied by mechanical ventilation, and later, tracheotomy was performed. An early echo showed mild turbulence over the pulmonary valve, but at nine months of age, enlargement of both atria was noticed, as well as signs of hypertrophic cardiomyopathy, pulmonary stenosis and insufficiency. An early brain ultrasound showed a nonspecific enlarged cavum septi pellucidi and a thinner corpus callosum. Head ultrasound and magnetic resonance imaging (MRI) of the brain at one month of age demonstrated bilateral grade 1 periventricular leukomalacia. A repeated brain MRI in the fourth month of life showed frontotemporal atrophy, partial agenesis of the corpus callosum, and hypoplasia of the cerebellum, pons and the optic nerve. At this time, the patient developed gener-

alised tonic seizures. Due to feeding difficulties, a gastrostomy tube was placed. As the patient grew, facial features such as a large forehead, bitemporal narrowing, hypertelorism, downslanting eyes, ptosis, a depressed nasal bridge, and externally rotated ears became more evident. A clinical psychology assessment at the corrected age of three months showed signs of delayed psychomotor development. After numerous negative tests and clinical pitfalls, a whole-exome sequencing analysis was performed. It demonstrated a *de novo* genetic mutation of the *BRAF* gene (V487G), and the diagnosis of CFC syndrome was set.

Conclusion: Although all of the most common clinical features were present, typical craniofacial dysmorphism and hair anomalies were only noted after a few months of hospital stay. Emphasising the importance of publishing rare cases like this could contribute to timely diagnosis and the development of more effective treatment methods.

Keywords: Cardiofaciocutaneous syndrome; Child; Genetic disease; Infant

FREEZING TO DEATH – ACCIDENTAL HYPERTHERMIA IN A 14-YEAR-OLD BOY

Lena Hitrec[1], Anđela Simić[2], Lana Oštro[3]

[1] Faculty of Medicine, University of Rijeka, Rijeka, Croatia
[2] Institute of Emergency Medicine of Varaždin County, Varaždin, Croatia
[3] Clinical Hospital "Sveti duh", Department of Neurology, Zagreb, Croatia

Corresponding author: lhitrec@uniri.hr

Aim: Hypothermia is a condition in which the body's internal temperature falls below 35 degrees Celsius. Although rare, hypothermia is a reversible cause of serious cardiac and respiratory system malfunction. This case aims to emphasize the importance of recognizing reversible causes of cardiac arrest and treating them appropriately.

Case report: A 14-year-old boy was reported by a friend to be submerged in icy water and at risk of drowning. Firefighters pulled the boy out of the water, and emergency responders approached to examine the patient. He was pulseless and apneic with a patent airway, which suggested no water aspiration. Capillary refill time was 6 seconds, body temperature unmeasurable (no low-range thermometer), pupils mydriatic, and GCS 3. Cold, wet clothing was removed, and immediate Advanced Life Support (ALS) resuscitation was initiated. The patient was intubated with an 8.0 tube and ventilated with a transport ventilator. Initial asystole was treated with 1 mg of adrenaline, while subsequent ventricular fibrillation (VF) required three defibrillations. Two IV lines were established, delivering 2 L of warm Ionolyte solution, and active rewarming began with blankets and warm air. After that, an AutoPulse was applied, and the patient was transported to the hospital, with the anesthesia team pre-notified for further management. After three hours of resuscitation, the patient died of cardiac arrest caused by hypothermia.

Conclusion: This case underscores the importance of rapid ALS protocols, aggressive rewarming, and interdisciplinary coordination in the management of hypothermic cardiac arrest. The absence of water aspiration suggested primary hypothermia rather than drowning, guiding targeted interventions. Nevertheless, a timely call for professional help would significantly increase the likelihood of successful resuscitation in all emergencies, including this one.

Keywords: Cardiac arrest; Child; Hypothermia; Rewarming

THE HIDDEN TEAR: SPONTANEOUS CORONARY ARTERY DISSECTION AS A RARE TRIGGER OF ACUTE CORONARY SYNDROME – A CASE REPORT

Lana Vivoda[1], Matko Spicijarić[1,2]

[1] Faculty of Medicine, University of Rijeka, Rijeka, Croatia
[2] Clinic for Cardiovascular Diseases, Clinical Hospital Center Rijeka, Rijeka, Croatia

Corresponding author: lvivoda1@student.uniri.hr

Aim: Spontaneous coronary artery dissection (SCAD) is a rare, non-atherosclerotic cause of acute coronary syndrome (ACS), accounting for up to 25% of cases in women under 50 years of age, who typically lack traditional cardiovascular risk factors. SCAD occurs due to the separation of the coronary artery wall layers, caused

by intimal rupture or bleeding from the vasa vasorum, resulting in an intramural hematoma, a false lumen, and compression of the true lumen, leading to myocardial ischemia. This case report aims to raise awareness of accurate diagnosis of myocardial infarction etiology to ensure appropriate management.

Case Report: A 38-year-old female presented to the emergency department with constrictive chest pain, which began after a meal and was accompanied by shallow breathing. The pain gradually radiated to the left chest and back. Her medical history was unremarkable, except for chronic antihypertensive therapy. Upon admission, the electrocardiogram (ECG) revealed mild ST elevation in the inferior and lateral leads. Initial laboratory tests were within normal limits, including cardiac biomarkers (TnI 15.8 ng/L, NT-proBNP 72 ng/L). A repeat ECG after 30 minutes was normal, but the pain persisted. The patient was diagnosed with ACS with transient ST elevation and urgently referred for coronary angiography. Angiography showed no atherosclerotic lesions but revealed SCAD of the mid and distal segments of the left anterior descending artery (LAD). According to the classification, this is a type 2 SCAD, characterised by a diffuse, long tubular lesion caused by an intramural hematoma, which does not respond to intracoronary administered nitrates. As coronary flow was preserved, a conservative management approach was chosen. The following day, echocardiography was normal, while cardiac biomarkers peaked (TnI 3295.4 ng/L). On discharge, the fifth day of hospitalisation, TnI had decreased to 620.6 ng/L. The patient was discharged symptom-free with ongoing therapy, consisting of nebivolol 2.5 mg, amlodipine 5 mg, acetylsalicylic acid 100 mg, and alprazolam 0.25–0.5 mg as needed. A three-month follow-up was uneventful, with a normal ECG and no subjective complaints.

Conclusion: This case underscores the clinical significance of recognising SCAD as a non-atherosclerotic cause of ACS, particularly in younger women without traditional cardiovascular risk factors. Timely diagnosis and identification of the underlying cause enable appropriate management, which in most uncomplicated cases can be conservative, resulting in favourable outcomes.

Keywords: Acute Coronary Syndrome; Chest Pain; Coronary Artery Dissection; Myocardial Infarction

PRIMARY ADRENAL INSUFFICIENCY AS A RARE COMPLICATION DURING ADJUVANT TREATMENT OF RENAL CANCER WITH PEMBROLIZUMAB – A CASE REPORT

Zora Ripić[1], Marin Golčić[1,2], Ivana Mikolašević[1,2]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] Clinical Hospital Center Rijeka, Department for oncology and radiotherapy, Rijeka, Croatia

Corresponding author: zripic@student.uniri.hr

Aim: Kidney cancer accounts for 5% of adult malignancies, and partial or radical nephrectomy is standard-of-care treatment for patients with localised renal cell carcinoma (RCC). However, almost half of patients will have disease recurrence after surgery, often with distant metastases, leading to a shortened life expectancy. In recent years, clinical trials have focused on targeted therapies and immunotherapies. Pembrolizumab, an anti-programmed death-1 immunotherapy, has demonstrated success as an adjuvant treatment for RCC with intermediate-to-high or high-risk of disease recurrence. However, despite the increase in disease-free survival, treatment with pembrolizumab can result in immune-mediated adverse effects, some of which can be fatal.

Case report: A 48-year-old man was admitted to the Emergency Department after experiencing worsening impaired vision during the previous month, along with overall weakness, fatigue, nausea, and decreased blood pressure for the previous ten days. He denied fever, diarrhea, vomiting or loss of consciousness. The patient has a history of RCC and underwent left-sided nephrectomy in February 2025 and was treated with 5 cycles of adjuvant pembrolizumab therapy. Laboratory findings revealed hyponatremia (113×10^{6} nmol/L), hyperkalemia (7.7×10^{9} nmol/L), reduced cortisol levels (174×10^{6} nmol/L), and hyperglycemia (14.4×10^{6} nmol/L). The patient was admitted to the Clinic for tumors with suspected adrenal insufficiency, which most often occurs during pembrolizumab treatment due to immune-mediated hypophysitis. He was immediately given hydrocortisone 100mg i.v., followed by maintenance therapy with Cortef 20mg + 10mg. However, additional analysis demonstrated a high level of adrenocorticotropic hormone, suggesting primary adrenal insufficiency, which is described only in several case reports in the literature. After stabilisation of electrolytes, the patient was discharged with maintenance hydrocortisone 20mg + 10mg and pantoprazole 40mg, with instructions to adjust the therapy dose depending on the level of stress.

Conclusion: Immune checkpoint inhibitors, such as PD-1 inhibitor pembrolizumab, have an expanding role in the management of solid tumors and are associated with improved clinical outcomes. However, their use is also linked to a spectrum of immune-mediated adverse events that can affect any organ. With this case, we want to draw attention to primary adrenal insufficiency, a rare side effect of adjuvant pembrolizumab therapy, which is important to emphasize due to the potential for serious medical emergencies and increased mortality resulting from misdiagnosis or delayed intervention.

Keywords: Kidney Neoplasms; Chemotherapy, Adjuvant; Immune Checkpoint Inhibitors; Addison Disease

CASE REPORT: RAAA – CRITICAL ROLE OF BEDSIDE ULTRASOUND IN EARLY DIAGNOSTICS

Lara Žubrinić[1], Natalija Volgemut[1], Nataša Mavrinac[2,3]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] Clinical Hospital Centre Rijeka, Emergency Department (ED), Rijeka, Croatia
[3] Anesthesiology, Reanimatology, Intensive Care and Emergency Medicine, Faculty of Medicine, Rijeka, Croatia

Corresponding author: lzubrinic@student.uniri.hr

Introduction: A ruptured abdominal aortic aneurysm (rAAA) is a critical vascular emergency characterized by significant mortality requiring swift recognition and immediate surgical intervention. Due to its variable and often nonspecific clinical presentation, misdiagnosis can occur potentially causing delays in treatment. While CT angiography is considered a standard for diagnosis, the presence of hemodynamic instability requires rapid bedside assessment. Ultrasound plays a crucial role in detecting intra-abdominal hemorrhage guiding urgent surgical decisions

Case report: A 67-year-old woman was brought to the emergency department following a syncopal episode and abdominal pain. Signs of shock were observed upon examination: pale, clammy skin, tachypnea tachycardia and hypotension. A bedside ultrasound was performed and, while it did not reveal free fluid, it confirmed the presence of a 5 cm abdominal aortic aneurysm surrounded by a hematoma, indicating rupture. Arterial blood gas analysis showed a lactate level of 5.3 mmol/L, a standard base excess of -5.8 mmol/L, while maintaining a pH and hemoglobin within normal range. Her clinical condition and diagnosis were demanding the activation of a massive transfusion protocol, and administration of two units of O-negative units of blood. Due to severe hemodynamic instability instead of going for a CT aortography the patient was taken for emergency surgery. Postoperatively a CT aortography demonstrated hypoperfusion of the small intestine, renal ischemia and thromboembolic events affecting the mesenteric vein, iliac and femoral arteries. Despite aggressive resuscitation she remained refractory to vasopressor support and ultimately succumbed to multi-organ failure.

Conclusion: Ultrasound is an ideal method for detecting AAAs due to its accuracy, low cost, and ability to be performed at the bedside. This case highlights the importance of high clinical suspicion and the role of point-of-care ultrasound in the timely diagnosis and management of rAAA in unstable patients.

Keywords: Abdominal aortic aneurysm; Misdiagnosis; Shock; Ultrasound

ADVANCED LARYNGEAL SQUAMOUS CELL CARCINOMA PRESENTING WITH ACUTE AIRWAY OBSTRUCTION AND PULMONARY COMPLICATIONS: A CASE REPORT

Marta Pešut[1], Ivona Žuža[1], Lucija Pešo[1], Iva Strelec[1], Helena Smokrović[1,2]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] Clinical Hospital Center Rijeka, Department of Pulmology, Rijeka, Croatia

Corresponding author: mpesut@student.uniri.hr

Aim: The aim of this presentation is to illustrate the management of advanced laryngeal carcinoma presenting with life-threatening airway obstruction, emphasizing the role of early recognition and definitive surgical treatment.

Case report: A 65-year-old male with a long history of smoking presented with progressive dyspnea, persistent throat pain, dysphagia, and a productive cough persisting for seven days, with notable worsening of symp-

toms during the night. Despite a four-day course of antibiotic therapy, his condition did not improve, but he remained afebrile throughout. Clinical examination revealed marked respiratory distress, inspiratory stridor, and diffusely reduced breath sounds on auscultation, findings highly suggestive of significant upper airway obstruction. Bronchoscopy identified an expansive glottic mass almost completely occluding the airway, and an urgent tracheotomy was performed to secure the airway. Subsequent imaging with computed tomography (CT) demonstrated a large laryngeal mass measuring 40×32×34 mm, accompanied by bilateral pleural effusions. Neck ultrasonography (US) was performed for staging and revealed no suspicious cervical lymphadenopathy. A biopsy of the lesion was obtained, and histopathological examination confirmed the diagnosis of invasive squamous cell carcinoma of the larynx. Considering these findings, the patient underwent definitive surgical management consisting of total laryngectomy with bilateral neck dissection and formation of a permanent tracheostoma. The patient recovered well postoperatively and was discharged following adequate recovery and adaptation to the tracheostoma. At nine-month follow-up, he remains alive, clinically stable, and in good general condition, with no signs of disease recurrence.

Conclusion: This case highlights the need for early recognition and prompt intervention in laryngeal carcinoma with airway obstruction and pulmonary complications. Definitive treatment involved total laryngectomy with neck dissection and tracheostoma formation. A multidisciplinary approach is vital to optimising patient outcomes. Early diagnosis, continuous airway monitoring, and timely surgical intervention remain crucial in managing advanced laryngeal malignancies and improving survival rates.

Keywords: Airway Obstruction; Laryngeal Neoplasms; Tracheostomy; Squamous Cell Carcinoma

THE USE OF EXTRACELLULAR MATRIX IN COMPLEX RECONSTRUCTION OF THE LOWER LEG AFTER MASSIVE AVULSION: A CASE REPORT

Petra Štiberc[1], Davor Jurišić[2]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] Clinical Hospital Center Rijeka, Department of Surgery, Rijeka, Croatia

Corresponding author: petra.stiberc@gmail.com

Aim: The aim of this case report is to present an innovative approach to managing a complex avulsion injury using extracellular matrix (ECM). Avulsion injuries with exposed bone and extensive soft tissue loss remain among the most challenging reconstructive problems. While traditional management relies on necrectomy and primary closure, split-thickness skin grafts (STSG) or flap procedures, this case highlights a less invasive yet highly effective alternative. It demonstrates that ECM, serving as a biocompatible scaffold, in synergy with STSG and vacuum-assisted closure (VAC) therapy, can achieve successful wound closure, functional preservation, and favorable outcomes.

Case report: We present a case of a 30-year-old male who sustained injuries in a motorcycle accident. The patient has a history of type 1 diabetes mellitus, increasing the risk of delayed healing and infection. Clinical examination revealed a large necrotic soft tissue avulsion wound on the left lower leg, extending from the infrapatellar region to the lower third of the leg. The wound was deep, with skin degloving, exposing the tibia, fascia, and anterior compartment muscles. Additionally, injuries included a complex tibia-fibula fracture, an avulsion fracture of the medial malleolus, and an open forearm wound with arterial involvement. After trauma stabilization, the patient was transferred to Plastic and Reconstructive Surgery. Diabetes therapy was optimized, and hyperbaric oxygen therapy was initiated. Subsequently, the patient underwent an operation: excision of necrotic tissue from the entire anteromedial aspect of the left lower leg. Due to intraoperative findings of deperiosted tibia, the planned simple necrectomy and STSG needed to be adapted. Bone debridement was performed to achieve healthy spongiotic bleeding. Furthermore, an ECM was used to close the large defect. Contrary to recommendations, two sheets of ECM were covered with an STSG taken from the anterior thigh. Combined with VAC, this approach accelerated ECM integration, achieving optimal healing with both functional and aesthetic outcomes.

Conclusion: This case report highlights the importance of multidisciplinary care in managing complex traumatic injuries, where timely intervention and the utilisation of the latest medical technologies are crucial for achieving optimal outcomes. ECM can play a pivotal role in complex wound management, offering cost--effectiveness, reduced recovery time, and improved functional and aesthetic outcomes. The wider adoption of

ECM-based techniques may represent a future standard in treating avulsion injuries, aligning with modern trends toward innovative and personalised surgical therapies.

Keywords: Avulsion; Extracellular matrix; Reconstruction; Skin graft

CLINICAL PRESENTATION OF GLIOTIC-MALACIC CHANGE NEAR THE FRONTAL LOBE OF THE RIGHT LATERAL VENTRICLE

Tea Elez[1], Stjepan Goronja[1], Natalija Frančin[1], Marko Host[1], Andrea Elez[2]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] General Hospital Zadar, Zadar, Croatia

Corresponding author: telez@student.uniri.hr

Aim: The aim of this case report is to present the clinical picture of a gliotic-malacic change. Their clinical significance depends on the localization, extent, and presence of accompanying neurological symptoms. Changes in the frontal brain regions may be associated with disturbances of executive functions, attention, behavior, or emotional control. In this case report, we present a patient in whom neuroimaging revealed a gliotic-malacic change near the frontal horn of the right lateral ventricle, with the aim of describing the clinical presentation, diagnostic approach, and potential clinical relevance of such a finding.

Case report: A 71-year-old female patient, previously treated for asthma, depression, metabolic syndrome, and arterial hypertension, was admitted to the emergency department due to memory loss, dizziness, and nausea. A brain MSCT scan showed brain parenchyma with normal absorption values and no clear signs of acute focal changes. A malacic area was noted near the right frontal horn. Significant asymmetry of the temporal structures was also observed, with a narrower left temporal horn and less pronounced sulci of the subarachnoid space. An MRI scan of the brain confirmed gliotic-malacic changes near the frontal horn of the right lateral ventricle and basal ganglia, with marginal hemosiderin deposits. Furthermore, it showed an enlarged ventricular system consistent with atrophy (GCA type 1, MTA type 2, Koedam type 1), and asymmetric lateral ventricles due to wider ventricles in the right cerebral hemisphere. MRI also verified a loss of "flow void" signal in the intracranial segment of the right internal carotid artery (ICA) and the M1 segment of the right middle cerebral artery (MCA), indicating occlusion. The post-ischemic lesion near the frontal horn of the right lateral ventricle and basal ganglia was a consequence of the occlusion of the right internal carotid artery. The patient presented multiple cerebrovascular risk factors – diabetes mellitus, hypertension, and hyperlipidemia – which likely contributed to this clinical picture. Regular follow-up and a tailored diet were recommended to reduce atherosclerotic risk factors. In addition to her previous therapy, the use of acetylsalicylic acid was also advised.

Conclusion: Changes in the frontal brain regions may be associated with disturbances of executive functions, attention, behavior, or emotional control. Their timely recognition and the avoidance of risk factors that increase their incidence are crucial to preventing complications and improving the patient's clinical condition.

Keywords: Atherosclerosis; Frontal lobe; Neuroimaging; Post-ischemic lesion

TAV-IN-SAV: A CASE REPORT

Hannah Žiganto[1], Lucija Žeželj[1], Tomislav Jakljević[1,2], Vjekoslav Tomulić[1,2], Davorka Lulić[1,2]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] Clinical Hospital Center Rijeka, Department of Cardiology, Rijeka, Croatia

Corresponding author: hannah.ziganto@gmail.com

Aim: Aortic stenosis is a narrowing of the aortic valve that restricts blood flow from the left ventricle into the aorta. Transcatheter aortic valve implantation (TAVI) is a minimally invasive procedure that involves the percutaneous implantation of a new aortic valve through a catheter. The valve-in-valve procedure (transcatheter aortic valve in surgical aortic valve, TAV-in-SAV) consists of placing a new valve within a previously surgically implanted bioprosthetic valve that has failed. This method allows treatment without the need for repeat open-heart surgery.

Case report: The patient is a 75-year-old male with severe symptomatic stenosis of the bioprosthetic aortic valve, chronic heart failure with an ejection fraction of 30%, ischemic heart disease, hypertension, and perma-

nent atrial fibrillation. He also has chronic kidney disease, type 2 diabetes mellitus, hyperlipoproteinemia, and pancytopenia. In 2016, he underwent surgical aortic valve replacement with bioprosthesis and coronary artery bypass grafting. In 2023, a pacemaker was implanted due to atrial fibrillation with a slow ventricular response. In October of 2024, he experienced worsening of chronic heart failure. Dobutamine stress testing confirmed severe stenosis of the bioprosthetic valve with preserved left ventricular contractile reserve. He subsequently underwent a TAV-in-SAV procedure, which was completed successfully with an optimal result. During the hospital stay, kidney function and blood count were closely monitored. By the end of the stay, both have improved. The control echocardiogram showed a proper position of the transcatheter valve with a low transvalvular mean gradient (13 mmHg) and a trace of paravalvular leak. At the beginning of hospitalization, the patient required very high doses of parenteral diuretics (furosemide 1000 mg daily combined with acetazolamide). Following the procedure, the diuretic regimen was reduced to 250 mg of furosemide daily, and acetazolamide was discontinued. This adjustment was associated with a marked improvement in the patient's functional status, and the patient was discharged after 21 days.

Conclusion: The patient with multiple comorbidities underwent a minimally invasive valve-in-valve procedure for severe stenosis of a surgical aortic valve. The intervention was completed successfully, with optimal valve function, demonstrating the effectiveness and safety of this approach in high-risk patients.

Keywords: Aortic valve stenosis; Heart failure; Heart Valve Prosthesis Implantation; Transcatheter aortic valve implantation

WHEN FIRST-LINE THERAPY FAILS: REFRACTORY AVNRT IN A 24-WEEK PREGNANT WOMAN

Paula Stepanić[1], Joseph Mancuso[2], Ivana Krajina[1], Nick Ernst[3], Vinay Thiagarajan[3]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] University of Kansas Medical Center, Department of Cardiology, Kansas, USA
[3] University of Kansas Medical Center, Faculty of Medicine, Kansas, USA

Corresponding author: pstepanic@uniri.hr

Aim: Atrioventricular nodal reentrant tachycardia (AVNRT), although the most common sustained supraventricular arrhythmia in pregnancy, remains rare with an estimated incidence of 22 per 100,000 pregnancies. Sustained tachycardia may result in maternal hypotension, heart failure, and the urgent need for cesarean delivery. It may also compromise uteroplacental perfusion and expose the fetus to risks of growth restriction, preterm birth, or distress. Management is further complicated by the limited pharmacological options and by the hesitation of clinicians to intervene aggressively in pregnant patients. In this context, drug-refractory AVNRT represents a particularly challenging scenario. The aim of this case report is to highlight the importance of timely recognition, stepwise therapy, and a prompt multidisciplinary approach in stabilizing the mother and protecting the fetus at 24 weeks of gestation.

Case report: A 28-year-old woman at 24 weeks of gestation presented to the emergency department with persistent palpitations for the past 12 hours. She described similar, self-limited episodes during her first pregnancy seven years ago. Upon admission, she was tachycardic with a heart rate in the 170s, consistent with supraventricular tachycardia. Initial therapy with adenosine 6 mg followed by 12 mg produced only transient rhythm control, and the patient rapidly reverted. Vagal manoeuvres were attempted and unsuccessful. The patient subsequently received IV metoprolol 5mg, IV verapamil 2.5 mg, and oral flecainide 200 mg. A repeat bolus of adenosine (12 mg) finally converted the patient to sinus rhythm. During arrhythmia, she was mildly hypotensive, which improved with intravenous fluids. Continuous fetal monitoring remained reassuring. The patient was hospitalized, started on flecainide 50 mg twice daily, and remained in sinus rhythm. Echocardiogram and fetal growth ultrasound were normal. She was discharged hemodynamically stable, asymptomatic, and tolerating flecainide, with close cardiology and obstetric follow-up planned.

Conclusion: This case illustrates the challenges of managing refractory AVNRT in pregnancy, in which maternal stabilization must be balanced with fetal safety. Although adenosine is the first-line therapy, resistant arrhythmias may require cautious escalation to alternative agents, such as beta-blockers, calcium channel blockers, or class IC antiarrhythmics. Hemodynamic consequences of persistent tachycardia make timely intervention

essential. Our patient's case demonstrates that a thoughtful stepwise approach with continuous fetal monitoring and close hemodynamic surveillance can achieve safe rhythm control without invasive measures.

Keywords: Anti-Arrhythmia Agents; Atrioventricular Nodal Reentry Tachycardia; Pregnancy; Supraventricular Tachycardia

AMIODARONE LUNG: A CASE REPORT

Jakov Jurlina[1], Anton Turić[1], Eugenija Basioli Kasap[2]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] General Hospital Zadar, Department of Pulmology, Zadar, Croatia

Corresponding author: jakov.jurlina@gmail.com

Aim: The aim of this paper is to present a case of amiodarone pulmonary toxicity (APT), a serious respiratory complication of amiodarone therapy. APT occurs in 1–10% of patients, with risk increasing with treatment duration and cumulative dose. Its clinical manifestations vary from interstitial and organizing pneumonia to diffuse alveolitis, acute respiratory distress syndrome, or pulmonary fibrosis.

Case report: A 72-year-old male was admitted to the emergency department due to progressive dyspnea developing over several weeks. Symptoms included shortness of breath on minimal exertion, air hunger, throat tightness, and a productive morning cough with white sputum that became dry during the day. He denied chest pain, nausea, vomiting, diarrhea, or catarrhal symptoms but reported back pain and anterior neck tenderness. The day before admission, he was subfebrile (37.5 °C), which resolved after paracetamol. His medical history included arterial hypertension, hyperlipidemia, and atrial fibrillation (one DC cardioversion). Chronic medications were apixaban, atorvastatin, nebivolol, perindopril/amlodipine, zolpidem, amiodarone (introduced 10 months earlier), and a diuretic. No allergies were reported. On admission, the patient was conscious, oriented, and mobile but dyspneic, pale, and in poor general condition. Cardiac examination revealed a regular rhythm, muffled heart sounds, and a systolic murmur. Breath sounds were normal, but oxygen saturation was 86%.

Chest X-ray showed an enlarged cardiac silhouette, prominent hilar markings, increased interstitial pattern, and small bilateral basal effusions. Laboratory results revealed an elevated CRP (68.5 mg/L). Contrast-enhanced chest MSCT demonstrated bilateral, ill-defined perilobular infiltrates across all lobes, consistent with an organizing pneumonia (OP) pattern, suggesting amiodarone-induced pulmonary toxicity. The patient received oxygen and diuretics (furosemide, eplerenone). After a pulmonology consultation, a diagnosis of interstitial lung disease of the OP type secondary to amiodarone was established. Amiodarone was discontinued, and corticosteroid therapy with methylprednisolone was initiated. A follow-up MSCT one month later showed regression of interstitial changes, supporting drug-induced toxicity. Compared with the initial findings, consolidations had resolved and were replaced by patchy ground-glass opacities, while mediastinal lymph nodes appeared normal.

Conclusion: Amiodarone-induced pulmonary toxicity is a rare but potentially severe complication. Prompt discontinuation of amiodarone and early corticosteroid therapy can lead to significant clinical and radiological improvement, emphasizing the importance of timely diagnosis and management.

Keywords: Amiodarone; Drug Toxicity; Lung Diseases, Interstitial; Pneumonia, Organizing

IL-23 INHIBITION AS AN EFFECTIVE STRATEGY FOR METHOTREXATE-RESISTANT PSORIASIS: A CASE REPORT

Bruna Matas[1], Larisa Prpić Massari[1,2]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] Clinical Hospital Centre Rijeka, Department of Dermatovenerology, Rijeka, Croatia

Corresponding author: bmatas@uniri.hr

Aim: Psoriasis is a common, chronic inflammatory skin disease characterized by circumscribed, erythematous plaques of varying size, commonly with silvery white lamellar scales on the surface. Psoriasis is caused by a T-helper 1 (Th1) and 17 (Th17) autoimmune response, in which IL-23 activates the Th17 cell pathway to mediate

the inflammatory cascade that induces psoriatic plaque formation. Methotrexate is a folate derivative that inhibits several enzymes involved in nucleotide synthesis, thereby suppressing inflammation and preventing cell division. Guselkumab is a human immunoglobulin G1 lambda (IgG1λ) monoclonal antibody that selectively inhibits interleukin-23. This report aims to illustrate the role of biologic drug guselkumab in the management of patients with psoriasis refractory to methotrexate.

Case report: We report a case of a 57-year-old man with a 16-year history of psoriatic skin lesions, who presented to the Dermatovenerology Clinic, University Hospital Center Rijeka, due to worsening of the clinical presentation despite systemic methotrexate therapy over the previous seven years. During 2019, within a period of seven months, a significant exacerbation of the disease was noted. Clinical examination revealed extensive plaques on the extensor surfaces of the extremities and trunk, with pronounced scalp desquamation. The PASI index was 24.5. Due to worsening of the disease, the dose of methotrexate was increased to 17.5 mg per week with continued topical application of corticosteroids, and at the same time, a switch to biological therapy was considered. Two months after the dose increase, the patient came for a follow-up examination without sufficient clinical improvement. Laboratory findings revealed hypercholesterolemia and hypertriglyceridemia as contraindications for the use of retinoids, so the introduction of the biological drug guselkumab was indicated and subsequently started. At the follow-up examination ten months after the start of therapy, complete remission of the disease was achieved, with PASI 0 and DLQI 0.

Conclusion: In this case, we highlight the importance of using biological therapy in methotrexate-resistant psoriasis. Rapid and effective achievement of PASI 0 significantly improves the quality of life of patients affected by psoriasis.

Keywords: Biological Therapy; Guselkumab; Methotrexate; Psoriasis

UNDETECTED FOREIGN BODY IN THE KNEE

Maja Kranjčec[1], Dora Klobučar[1], Stjepan Goronja[1], Leo Gulan[2]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] Lovran Orthopedics Clinic, Lovran, Croatia

Corresponding author: mkranjcec@student.uniri.hr

Aim: This case report aims to underscore the fact that an intra-articular foreign body in the knee joint can remain undetected for years, especially when the scar is inconspicuous or the symptoms are absent. A prolonged asymptomatic phase is common if the object is adherent to the synovial capsule or located in synovial recesses; symptoms typically arise when it becomes mobile. It is essential to emphasise that a foreign body can penetrate a joint through various mechanisms, such as traffic accidents, explosions, or injuries that cause skin lacerations. The most common foreign body locations in the knee are the suprapatellar pouch, the intercondylar notch, and the posterior compartments, primarily due to gravity and movement. In this case, the object is found infrapatellarly in Hoffa's tissue.

Case report: A 49-year-old male presents with medial knee pain. Physical examination suggests a Frecciarossa meniscal injury. Radiographic imaging unexpectedly reveals a large infrapatellar intra-articular foreign body. A multislice CT scan with 3D reconstruction locates a 5x1 cm object in Hoffa's fat pad. Further history reveals a childhood motorcycle fall that caused a minor anterior knee laceration. At the time, the wound was cleaned, but because there was no swelling or restricted motion, radiographic evaluation was not considered necessary. Although arthroscopy is effective for visualising and removing foreign bodies, it was unsuccessful in this case due to obstruction by Hoffa's fat pad and its limited access to extracapsular areas, requiring an open surgical approach.

Conclusion: Any wound in the knee region with disrupted skin integrity may serve as an entry point for a foreign body. The size of the wound does not necessarily correlate with the shape or volume of the foreign body. Therefore, radiographic evaluation of the knee is recommended in cases of trauma involving disruption of skin integrity.

Keywords: Arthroscopy; Foreign Bodies; Hoffa's Fat Pad; Intra-articular; Knee Joint

FROM WHEELCHAIR TO WALKING: FUNCTIONAL RECOVERY AFTER BILATERAL PANTALAR ARTHRODESIS IN A PATIENT WITH ADVANCED RHEUMATOID ARTHRITIS

Dora Klobučar[1], Maja Kranjčec[1], Stjepan Goronja[1], Hrvoje Klobučar[2]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] Akromion, Special Hospital for Orthopaedics and Traumatology, Zagreb, Croatia

Corresponding author: dklobucar@student.uniri.hr

Aim: This case report emphasizes the remarkable restoration of mobility in a patient with advanced rheumatoid arthritis who presented with severe bilateral foot deformities and was initially wheelchair-bound. It illustrates the role of bilateral ankle arthrodesis as a salvage procedure to correct deformity, relieve pain and significantly improve mobility and quality of life.

Case report: A 45-year-old female with long-standing rheumatoid arthritis presented with severe bilateral foot pain and inability to walk. Her history included bilateral total knee and hip arthroplasties and left wrist arthrodesis. Examination revealed rigid bilateral planovalgus deformities, more pronounced on the left, with medial skin maceration, calluses and superficial ulceration. Radiographic imaging showed a lateral distal tibial defect, medial talar subluxation with erosion and fibular articulation with the lateral calcaneus. Due to the severity, the left side was prioritized and treated with one-stage tibiotalar, talocalcaneal and talonavicular arthrodesis, along with tibialis posterior tendon refixation. Fixation was achieved using a tibiotalocalcaneal locking plate, lag screw with washer and additional locking screws. Postoperatively, the foot was immobilized in a below-knee splint in a neutral position. Non-weight-bearing was maintained for 14 days, followed by gradual weight-bearing in a custom-made fiberglass boot for three months. One month postoperatively, the patient developed a panaritium on the left thumb and received co-amoxiclav, leading to *Clostridium difficile* sepsis due to dysbiosis. The patient fully recovered after antimicrobial and supportive therapy. One year later, satisfied with the outcome, the patient underwent tibiotalocalcaneal arthrodesis of the right ankle and metatarsophalangeal arthrodesis of the right hallux with locking plate fixation. The same postoperative regimen was applied. Six months after the second surgery, the patient is walking unaided.

Conclusion: In advanced rheumatoid arthritis, severe foot and ankle deformities can persist despite multiple joint replacements, severely affecting function. Multijoint arthrodesis combined with tendon refixation can restore alignment and weight-bearing capacity. Successful outcomes depend on detailed preoperative planning, advanced imaging, meticulous technique and individualized postoperative care.

Keywords: Arthrodesis; Callus; Foot Deformities; Planovalgus; Rheumatoid Arthritis

PREMATURE TWINS WITH PLACENTA PREVIA AND AN UNEXPECTED COMPLICATION – A CASE REPORT

Niko Kirinčić[1], Maja Zaninović[1,2], Marko Host[1], Stjepan Goronja[1], Roko Pirović[1]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] Clinical Hospital Center Rijeka, Pediatric Department, Rijeka, Croatia

Corresponding author: nkirincic@student.uniri.hr

Aim: Placenta previa is a pregnancy condition where the placenta covers all or part of the cervix. During the second half of pregnancy, the most common symptom is vaginal bleeding, which can be life-threatening for the pregnant woman and the baby. The method of delivery for placenta previa is almost always a cesarean section (C-section). Tension pneumotorax in premature infants is a rare but serious condition, most often caused by respiratory distress syndrome (RDS). This case report highlights the importance of an emergency delivery by C-section following massive placental bleeding, as well as the timely management of tension pneumotorax in preterm neonates.

Case report: A 27-year-old woman was admitted to the gynecology department for mild placenta previa bleeding in the 29th week of twin pregnancy. An emergency C-section was performed due to the progression of bleeding. Two little girls were safely brought into the world, repeatedly sensory stimulated, and surrounded by heaters. The first twin was administered continuous positive airway pressure at 5 cm H2O with a fraction of

inspired oxygen of 40%, without the need for positive-pressure ventilation. She was born with a very low birth weight of 1250g and an Apgar score of 6/7. Following admission to the neonatal intensive care unit, noninvasive positive pressure ventilation was initiated. Since the antenatal corticosteroid prophylaxis wasn't performed, she developed severe RDS and surfactant was applied (LISA method). A few minutes after application, there was a deep oxygen desaturation to 60% with pronounced signs of dyspnea, bradycardia, sudden abdominal distension, and absent breath sounds on the right. Radiologically, a complete right-sided tension pneumothorax was confirmed. Emergency needle thoracentesis was performed with rapid clinical improvement, and a thoracic drainage catheter was placed. The conventional mechanical ventilation was initiated, but on the 2nd day of life, she developed pulmonary hypertension that was treated with inhaled nitric oxide for three days, resulting in clinical improvement. In the following days, the high-frequency oscillatory ventilation led to further improvement, with chest x-rays confirming complete regression of the pneumothorax. She was discharged from the hospital at 37th weeks of corrected gestational age.

Conclusion: Tension pneumothorax in a premature infant is a medical emergency that requires rapid recognition and prompt treatment – needle thoracocentesis – to avert sustained hypoxia, thus reducing the risk of long-term sequelae and allowing for normal psychomotor development of the premature newborn.

Keywords: Placenta Previa; Premature Birth; Pneumothorax; Thoracentesis

MYOCARDIAL INFARCTION WITH NON-OBSTRUCTIVE CORONARY ARTERIES IN PREGNANCY – A DIAGNOSTIC CHALLENGE

Karla Kleščić[1], Gordana Bačić[2]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] Clinical Hospital Centre, Department of Cardiology, Rijeka, Croatia

Corresponding author: karla.klescic2@gmail.com

Aim: To report a case of myocardial infarction with non-obstructive coronary arteries (MINOCA) in a patient at 37 weeks of gestation and outline pregnancy-related diagnostic challenges.

Case Report: A 31-year-old patient at 37 weeks' gestation developed sudden chest pain radiating interscapularly while driving. Upon arrival at the emergency department, she was hemodynamically and respiratory stable (BP 110/70 mmHg, HR 75/min, SpO_2 98%, RR 16/min). Examination showed clear lungs, a discrete systolic murmur consistent with a known bicuspid aortic valve, a gravid non-tender abdomen and mild ankle oedema. Electrocardiogram (ECG) demonstrated dynamic ischaemic ST–T changes, and high-sensitivity troponin exhibited a rise-and-fall pattern fulfilling myocardial infarction (MI) criteria. Laboratory tests were notable for mild anaemia and neutrophil-predominant leukocytosis, with normal levels of the inflammatory parameters, platelets and liver enzymes. The urine analysis excluded significant proteinuria. Transthoracic echocardiography showed preserved left ventricle (LV) function without regional wall-motion abnormality. The bicuspid aortic valve was unchanged, without significant functional disorders. To exclude the most common causes of MI in pregnancy, the spontaneous coronary artery dissection (SCAD) and atherosclerotic coronary artery disease, coronary CT angiography with aortography was done, selected to minimise invasiveness and radiation. It revealed patent epicardial coronaries without obstructive lesions or dissection, with an anomalous origin of one coronary artery as an incidental finding. Compression ultrasonography of the lower-limb veins showed no DVT, making pulmonary embolism unlikely. With cardiology–obstetric co-management, she was treated conservatively (analgesia, rest, haemodynamic surveillance). Her symptoms resolved, and there were no further events. Outpatient follow-up was arranged, with postpartum reassessment planned for vasospasm or microvascular dysfunction.

Conclusion: MINOCA in a pregnant patient often represents a diagnostic challenge because of the heterogeneity of its etiology, varied clinical presentation, the difficulty in distinguishing MINOCA from other pregnancy-related conditions, and the lack of a gold-standard test. A diagnostic pathway should employ a comprehensive approach using multimodality imaging, while balancing the risks of maternal and fetal complications.

Keywords: Aortography; Coronary Angiography; Coronary Artery Dissection; Electrocardiography; Myocardial Infarction; Pregnancy

FROM MOTHER TO SON – A FAMILIAL HYPERTROPHIC CARDIOMYOPATHY CASE REPORT

Mia Kontuš[1], Lucija Vargović[1], Željka Rubeša Miculinić[2], Koraljka Benko[1,2], Ana Petretić[1,2], Lea Skorup Ćutić[1,2], Teodora Zaninović Jurjević[1,2], Davorka Lulić[1,2]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] Clinical Hospital Center Rijeka, Clinic for Cardiovascular Diseases, Rijeka, Croatia

Corresponding author: mia.kontus@gmail.com

Aim: Familial hypertrophic cardiomyopathy (HCM) is an inherited condition characterized by abnormal thickening of the myocardial wall, mainly affecting the left ventricle, in the absence of other cardiac or systemic disorders. The two most common genes associated with HCM are MYBPC3 and MYH7. About 50% of HCM cases are caused by pathogenic variants in the MYBPC3 gene. MYBPC3 encodes myosin-binding protein C, a sarcomere component that regulates myocardial contraction. HCM caused by MYBPC3 variants follows an autosomal dominant inheritance pattern. Homozygous individuals are more severely affected, often leading to neonatal death, while heterozygous individuals show incomplete penetrance, ranging from 50 to 62% for familial HCM-related pathogenic variants. This case report emphasizes the importance of recognizing symptoms early in hereditary cardiac conditions.

Case report: A 55-year-old woman with arterial hypertension and class III obesity underwent cardiological evaluation in mid-September 2025 due to progressive dyspnea and fatigue. Examination revealed a grade V/VI systolic murmur over the aortic valve and bilateral pretibial edema. Family history revealed that her 28-year-old son has been diagnosed with HCM exhibiting a non-obstructive phenotype. Genetic analysis identified a variant of uncertain significance in the MYBPC3 gene. Considering these findings, complete cardiac and genetic screening was advised for all first-degree relatives at the time of his diagnosis. Transthoracic echocardiography (TTE) was scheduled, but by late September 2025, the patient experienced chest pain and worsening heart failure. The electrocardiogram showed atrial fibrillation with rapid ventricular response, and she was hospitalized. TTE demonstrated left ventricular hypertrophy, most pronounced in the septum, an enlarged left atrium, severe left ventricular outflow tract obstruction, mild aortic stenosis, and moderate mitral regurgitation with systolic anterior motion of the anterior mitral leaflet. These findings were consistent with an obstructive HCM phenotype. Coronary angiography showed no abnormalities. Her HCM risk score, which estimates the 5-year risk of sudden cardiac death in patients, was 3.2%, and after stabilization, she was discharged. Further evaluation, including cardiac magnetic resonance, genetic testing, and assessment for infiltrative heart disease, is planned.

Conclusion: Conditions such as HCM often have a heritable component. In such cases, prompt completion of the recommended investigations for at-risk relatives is advised to guide appropriate management and to identify individuals who may benefit from genetic testing and early intervention.

Keywords: Cardiac Myosins; Cardiomyopathies; Genetic Testing; Hypertrophy

A HEADACHE CAUSED BY CAVERNOUS SINUS THROMBOSIS; CASE REPORT

Ema Talan[1], Klara Poldan Skorup[2]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] Clinical Hospital Centre Rijeka, Emergency department, Rijeka, Croatia

Corresponding author: ema.talan@student.uniri.hr

Aim: To underline the importance of including rare but serious causes of headache in the differential diagnosis. This case illustrates how atypical presentations in elderly patients can rapidly progress to neuro-ophthalmologic emergencies.

Case report: An 84-year-old female patient presented to the emergency department independently due to a severe frontotemporal headache that woke her up. She also complained of neck and occipital pain. After applying analgesic therapy, which resulted in regression of symptoms, and after proper radiological processing, the patient was discharged. Two days later, she returned with a headache, periorbital edema bilaterally (stronger on the left eye), impaired vision, mildly painful eyeballs when palpated, and tearing of the left eye. The patient received a referral for an ophthalmologist's examination, which she attended the day after. The ophthalmologist described

bilateral ptosis, weaker pupillary reaction, left-sided protrusion, and limited bulbomotor movement in all directions. A CT orbit scan was performed urgently and showed primarily the left superior ophthalmic vein thrombosis (SOVT) and the right sphenoid sinuses. A CT cavography scan confirmed bilateral cavernous sinus thrombosis (CST). The sphenoid sinus was -molecular-surgically treated, and low molecular weight heparin (LMWH) was ordered to treat SOVT and CST. The infectologist prescribed meropenem and vancomycin. On the day of the discharge, the inflammatory eye changes were in regression. LMWH was replaced with edoxaban, and a nasal spray with silver was given. The patient was referred for a control check-up after getting the results of an MRI scan.

Conclusion: Headaches can have a wide range of causes, from benign to life-threatening. This case highlights the importance of considering rare but severe conditions such as CST in the differential diagnosis, especially when symptoms worsen or new neurological signs appear. Early diagnosis and prompt multidisciplinary treatment are crucial for improving patient outcomes and preventing severe complications.

Keywords: Cavernous Sinus Thrombosis; Headache; Sinusitis; Thrombosis

PERSISTENT VENTRICULAR TACHYCARDIA: A CASE REPORT

Stjepan Goronja[1], Natalija Frančin[1], Dora Klobučar[1], Maja Kranjčec[1], Sara Milić[2]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] Clinical Hospital Center Rijeka, Department of Cardiology, Rijeka, Croatia

Corresponding author: sgoronja@student.uniri.hr

Aim: Radiofrequency ablation is an invasive cardiology procedure used to selectively destroy a small part of the heart muscle. This area conducts an abnormal electrical impulse that causes tachycardia. The aim of this case report is to present a patient who did not have an adequate response to medical therapy and therefore required this form of treatment.

Case Report: A 77-year-old female patient was admitted with recurrent episodes of rapid heart rate and chest pain. Her medical history included refractory ventricular tachycardia, ischemic heart disease with prior myocardial infarction and PCI, hypertension, hyperlipidemia, and glaucoma. Ablation treatment of ventricular tachycardia was planned. A cardiac CT was performed, revealing a large thrombus in the apex of the left ventricle measuring 30 × 11 millimetres and a chronic infarction of the basolateral wall of the heart in the perfusion area of the LCx. Atherosclerotic changes of the coronary arteries were also observed, with moderate stenoses of the right coronary artery (RCA) and left anterior descending artery (LAD), as well as an occlusion of the LCx in its distal half. As ventricular tachycardia was refractory to pharmacological therapy, the patient was referred for an electrophysiological study of the heart with radiofrequency ablation. A three-dimensional voltage and activation map of the left ventricle was performed, demonstrating a large scar across the entire posterior wall. The affected area was ablated, resulting in termination of the arrhythmia. After the procedure, there were no recurrences of ventricular tachycardia. Due to the development of a hematoma at the puncture site, appropriate diagnostics were carried out, including an ultrasound of the groin and CT peripheral angiography of the lower extremities. By the time of discharge, the hematoma had spontaneously regressed, and anticoagulant therapy was introduced.

Conclusion: The acute success rate of such procedures ranges from 60% to 80%, and they should be performed in patients who, despite optimal pharmacological therapy, fail to control the arrhythmia. Continuous follow-up of patients after the procedure and adequate supportive therapy are essential.

Keywords: Heart Disease; Interventional Cardiology; Radiofrequency Ablation; Ventricular Tachycardia

ACUTE MYOCARDIAL INFARCTION – A CASE REPORT

Stjepan Goronja[1], Luka Brekalo[1], Tea Elez[1], Marko Host[1], Niko Kirinčić[1], Alda Ćefo[2]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] Clinical Hospital Center Rijeka, Unified Emergency Hospital Admission, Rijeka, Croatia

Corresponding author: sgoronja@student.uniri.hr

Aim: Acute coronary syndrome (ACS) is a collective term for clinical syndromes that occur due to a sudden, critical reduction of blood flow through the heart muscle. The aim of this paper is to demonstrate the importance of continuous ECG monitoring in patients to track the progression of cardiac changes in emergency conditions.

Case report: A 74-year-old male patient was brought to the emergency department by ambulance due to chest pain. He reported that on the same day, while sitting, he began to feel a dull pain in the centre of his chest, without radiation, with an intensity of 6 out of 10. Prehospital therapy included acetylsalicylic acid 300 mg orally, enalapril 5 mg orally, and amlodipine 5 mg orally due to elevated blood pressure levels. The first ECG showed mild ST elevation in lead V1 with a biphasic T wave. The second ECG, obtained after the patient complained of new left arm pain and decreased chest pain, also showed mild ST elevation in V1 with a biphasic T wave, as well as ST depressions in the septal and lateral leads with hyperacute T waves. Laboratory findings revealed a markedly elevated troponin I level of 502.5 ng/L (normal <17.5 ng/L). During his stay in the emergency department, the patient was administered ticagrelor 180 mg orally. He was then referred for a cardiology consultation. An emergency coronary angiography and primary percutaneous coronary intervention (PCI) were performed, with the placement of a stent in the left anterior descending (LAD) coronary artery. During subsequent hospitalisation and at discharge, the patient remained cardiacally compensated, normotensive, and haemodynamically stable.

Conclusion: This case demonstrates the importance of serial ECG recordings in patients with chest pain and suspected acute coronary syndrome, as dynamic changes observed between the first and second ECGs can be crucial for diagnosis and timely intervention. Prompt and appropriate management is essential to maximize the chances of a favorable outcome, minimize myocardial damage, and prevent permanent complications.

Keywords: Acute Coronary Syndrome; Coronary Angiography; Myocardial Infarction; Percutaneous Coronary Intervention

ALICE IN WONDERLAND – A CASE REPORT

Dorotea Kožnjak[1], Tajana Kukolj[1], Elvira Koić[2]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] Dr. Ivan Barbot Neuropsychiatric Hospital, Popovača, Department of Resistant and Chronic Disorders, Popovača, Croatia
Corresponding author: dkoznjak@uniri.hr

Aim: This complex clinical case is presented within the context of chronic paranoid disorder, highlighting the occurrence of perceptual disturbances described in the literature as *Alice in Wonderland Syndrome* (AIWS). The aim of this case report is to emphasize the need for an integrated multidisciplinary approach to diagnosis and treatment, particularly the collaboration among psychiatrists, neurologists, and psychologists.

Case report: A 76-year-old female patient, a widow under long-term psychiatric care, was hospitalized in the Department of Resistant and Chronic Disorders following acute treatment at the Psychiatry Clinic due to the need for extended care related to persistent paranoia, hypobulia, and ingrained experiences of specific perceptual disturbances. She described experiences of changes in her body, with a constant sensation that parts of her body were growing, accompanied by a subjective feeling of space distortion, which suggested AIWS. Therapeutically, she was stabilized with antipsychotics, clozapine and quetiapine, anxiolytics, and corrective somatic treatment. However, it was only after the introduction of depot fluphenazine with weekly applications that partial remission of perceptual disturbances was achieved. As a result, she no longer exhibited intense affect and showed improvements in mood and daily functionality. In agreement with the patient's family, she was discharged for outpatient care, with recommendations for partial assistance and continuous monitoring due to persistent vulnerability and insufficient compliance with psychopharmacological treatment.

Conclusion: Alice in Wonderland Syndrome in elderly age can manifest as part of a psychotic, but also partially neurological spectrum of disorders. A multidisciplinary approach, including psychiatric, neurological, and

psychological evaluations, is crucial for differential diagnosis and optimal treatment. Timely recognition of perceptual distortion phenomena can contribute to a better understanding of the patient's subjective experience and the individualization of therapeutic approaches.

Keywords: Alice in Wonderland Syndrome; Body Dysmorphic Disorder; Fluphenazine; Geriatric Psychiatry; Psychotic Disorder

EXTENSIVE STANFORD TYPE A AORTIC DISSECTION WITH PROMPT DIAGNOSIS AND SURGICAL SUCCESS – A CASE REPORT

Marko Host[1], Mia Šestan[2], Stjepan Goronja[1], Niko Kirinčić[1], Luka Brekalo[1], Tea Elez[1]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] Clinical hospital Center Rijeka, Department of Anesthesiology, Rijeka, Croatia

Corresponding author: m.host.com@gmail.com

Aim: Aortic dissection is a rare but life-threatening cardiovascular emergency that results from a tear in the intimal layer of the aorta, leading to blood entering the media and creating a false lumen. If not recognised, dissection can lead to rupture and extensive bleeding from the aorta, which is connected to a high mortality rate. This case report highlights the importance of prompt recognition and surgical repair of aortic dissection, Stanford type A.

Case report: A 65-year-old female patient was admitted to the emergency department for experiencing sudden and severe chest pain, rated 8/10 on the VAS scale, predominantly on the left side. The patient experienced symptoms while sitting at home. She also reported shortness of breath and vomited multiple times during transportation to the emergency department. Upon examination, the patient was hemodynamically stable, with normal heart rate, blood pressure, and respiratory rate. No abnormalities were found on ECG or laboratory tests, including normal troponin levels. However, due to persistent symptoms and high clinical suspicion, a CT aortography was performed, revealing an extensive Stanford type A aortic dissection. The dissection originated above the right carotid artery and extended distally to the iliac arteries. The celiac trunk, superior mesenteric artery, and both renal arteries arose from the false lumen, although no signs of abdominal organ mal perfusion were identified. Coronary arteries were neatly opacified. An echocardiogram revealed a left ventricular ejection fraction of 55% and severe aortic regurgitation. The patient underwent emergent open surgical repair with implantation of an AMDS stent and graft interpositum. After surgery, she was transferred to the intensive care unit, where she was stable and was extubated on the second day post-surgery. The patient was discharged from the hospital on the ninth day in excellent condition and without complications.

Conclusion: Aortic dissection is a medical emergency that requires early recognition and immediate treatment. Typical dissection symptoms should raise clinical suspicion, and advanced imaging confirms the diagnosis. Timely surgical intervention, especially in extensive type A dissections, is crucial in improving patient outcomes.

Keywords: Aortic dissection; Aortography; Chest pain; Surgery; Troponin

POSTOPERATIVE COMPLICATIONS FOLLOWING RESECTION OF A MEDULLARY HEMANGIOBLASTOMA: A CASE REPORT AND ETHICAL CONSIDERATIONS IN INTENSIVE CARE MANAGEMENT

Lucija Glumac

Faculty of Medicine in Rijeka, Croatia, Clinical Intership at Department of Neurosurgery, München Klinik Bogenhausen, Germany

Corresponding author: lglumac@uniri.hr

Aim: To present a complex case of medullary hemangioblastoma complicated by postoperative hemorrhage, brainstem edema, and secondary ischemic injury, emphasizing the challenges of neurosurgical management and ethical decision-making in prolonged intensive care.

Case report: A 34-year-old male presented with progressive dysphagia, dysarthria, dizziness, and left-hand paresthesia. MRI revealed a medullary hemangioblastoma. Microsurgical resection via median suboccipital cra-

niotomy achieved near-total removal of a highly vascularized lesion. Postoperatively, the patient developed respiratory instability and aspiration requiring bronchoscopy and reintubation. CT demonstrated a hemorrhage within the resection cavity extending into the ventricular system, necessitating surgical revision with evacuation and external ventricular drain placement. Despite decompression and adequate ICP control, the patient remained ventilator-dependent due to persistent dysphagia and posterior fossa oedema. Subsequent MRI revealed bilateral hemispheric infarctions in the anterior and middle cerebral artery territories with loss of cortical evoked potentials, indicating irreversible cortical damage. Following multidisciplinary discussion and ethics consultation, active treatment was discontinued in accordance with the patient's presumed will. The patient passed away under palliative care measures.

Conclusion: Medullary hemangioblastomas represent a significant surgical challenge due to their vascularity and critical location. This case illustrates the potential for severe postoperative complications despite technically successful resection and highlights the need for early multidisciplinary and ethical involvement in managing patients with poor neurological prognosis.

Keywords: Hemangioblastoma; Medulla oblongata; Postoperative complications; Brain edema; Ethics; Palliative care

MILIARY TUBERCULOSIS WITH CROHN'S DISEASE: A CASE REPORT

Tea Tomičević[1], Lucija Tomulić[1], Alojzije Lacković[1,2]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] Clinical Hospital Center Rijeka, Department of Gastroenterology, Rijeka, Croatia

Corresponding author: tea.tomicevic5@gmail.com

Aim: Appearance of miliary tuberculosis while using anti-TNF therapy is rare, but a serious condition. It should be treated as soon as it is found, which shows the importance of early screening and prophylaxis. This case report describes the appearance of miliary tuberculosis as a side-effect of using anti-TNF therapy for Crohn's disease treatment.

Case report: A 44-year-old male was hospitalised at the Emergency department due to fever. The patient was given amoxicillin/clavulanic acid and cefixime therapy by his general practitioner, which caused severe diarrhea. First suspicion was perforation of the gallbladder, but it was confirmed negative after a CT scan and an ultrasound of the abdomen. Due to his persistent fever and respiratory insufficiency, he was relocated to the Department of Pulmology. Radiogram showed shading in the upper and middle parts of the lungs, corresponding to an inflammatory infiltrate. The patient has an earlier diagnosis of Crohn's disease, which leads to suspicion of miliary tuberculosis. *Mycobacterium tuberculosis* was detected as positive on the PCR test of the sputum. A CT scan of the thorax revealed that the patient has miliary nodules distributed throughout the lungs, accompanied by ground-glass opacity (GGO). The patient was given Quadruple Anti-Tuberculosis therapy (ATL), and his Adalimumab therapy for Crohn's disease was discontinued.

Conclusion: This case represents the potential risk of reactivation of latent tuberculosis during anti-TNF therapy and illustrates how pre-treatment screening for latent tuberculosis and continuous monitoring during biological therapy are essential to prevent this life-threatening condition. Early recognition of symptoms can significantly improve patient outcomes.

Keywords: Miliary tuberculosis; Biological therapy; Crohn's disease; Screening

INTEGRATIVE APPROACHES TO PEDIATRIC ABDOMINAL RECONSTRUCTION: STRATEGIC SOLUTIONS FOR NEONATAL UMBILICAL CORD HERNIA – CASE REPORT

Dorotea Živalj[1], Antea Kršek[1], Suzana Sršen Medančić[1,2], Lara Batičić[3], Ana Bosak Veršić[1,2]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia.
[2] Clinical Hospital Center Rijeka, Department of Pediatric Surgery, Rijeka, Croatia.
[3] University of Rijeka, Faculty of Medicine, Department of Medical Chemistry, Biochemistry and Clinical Chemistry, Rijeka, Croatia.

Corresponding author: dzivalj@uniri.hr

Aim: The aim is to present a case of umbilical cord hernia, a rare anomaly and a subtype of omphalocele, which belongs to the congenital defects of the anterior abdominal wall. Omphalocele is a birth defect of the abdominal wall in which the abdominal organs protrude into the base of the umbilical cord, and treatment in such cases is always surgical when ileus is proven.

Case report: We present the case of a female infant born at Pula General Hospital from the mother's first pregnancy. The child was diagnosed with an umbilical cord hernia, a type of omphalocele and transferred the next day to the Rijeka Clinical Hospital Center. In the ninth hour of life, the newborn presented with vomiting of greenish-brown intestinal contents, prompting further diagnostic evaluation. A supine abdominal X-ray was performed, revealing signs of ileus. An abdominal ultrasound confirmed the presence of distended bowel loops filled with fluid and lacking peristalsis, indicating intestinal obstruction. The combination of imaging findings confirmed mechanical intestinal obstruction, which required urgent surgical management. Early recognition of these signs was essential in preventing bowel necrosis and further complications. Bowel passage revealed a distended intestinal coil partially protruding into the omphalocele. The patient underwent emergency surgery due to clinical and radiological signs of ileus. A median laparotomy was performed. The enlarged portion of the small intestine adhered to the omphalocele sheath's base, connecting to a significantly narrowed and atretic segment of the small intestine was resected and a T-T anastomosis and appendectomy were performed. The remaining omphalocele sheath was resected and separated, followed by individual layer suturing of the abdominal wall. Navel reconstruction was performed in the lower section of the abdomen.

Conclusion: Omphalocele can be treated conservatively and surgically. Surgical intervention is the standard for anterior abdominal wall defects with associated intestinal atresia. To ensure good quality of life, layered reconstruction should focus on navel reconstruction. Multidisciplinary collaboration between neonatologists, pediatric surgeons, and radiologists remains essential for achieving a favorable prognosis in patients with umbilical cord hernia.

Keywords: Abdominal Wall Defects; Anastomosis; Intestinal Atresia; Omphalocele

A CASE REPORT OF CHRONIC BURN WOUND FAILURE: THE INTERPLAY OF STAPHYLOCOCCUS AUREUS, HYPOALBUMINEMIA, AND ANXIETY

Luka Brekalo[1], Roko Pirović[1], Stjepan Goronja[1], Nika Sučić[2], Eva Starešinić[2], Aleksandra Pirjavec Mahić[3]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] University of Zagreb, Faculty of Medicine, Zagreb, Croatia
[3] Clinical Hospital Centre Rijeka, Department of Plastic and Reconstructive Surgery, Rijeka, Croatia

Corresponding author: lbrekalo@student.uniri.hr

Aim: This case report aims to analyze the multifactorial etiology of delayed burn wound healing in a 53-year-old female, emphasizing the often-overlooked influence of systemic factors such as chronic infection, nutritional deficiency, and psychological distress.

Case report: A 53-year-old female was hospitalized after several months with non-healing superficial and partial-thickness burns affecting multiple body sites, characterized by excessive hypergranulation tissue. Diagnostic evaluation identified three key systemic impediments. The wounds were persistently colonized by Staphylococcus aureus, maintaining chronic inflammation as reflected by elevated inflammatory markers. This infection was accompanied by pronounced hypoalbuminemia, indicative of a nutritional deficit impairing tissue regeneration. In addition, the patient was diagnosed with generalized anxiety disorder, highlighting the adverse

effect of sustained psychological stress on immune function and wound repair. Treatment consisted of surgical debridement of hypergranulation tissue, targeted antibiotic therapy, nutritional supplementation, and anxiolytic medication. The coexistence of infection, nutritional compromise, and psychological stress was identified as a triad of modifiable barriers to successful wound closure.

Conclusion: This case demonstrates that chronic burn wound healing failure is a multifactorial process seldom resolved by a single therapeutic approach. The interplay of Staphylococcus aureus, hypoalbuminemia, and anxiety formed a self-perpetuating cycle of inflammation and impaired regeneration. Comprehensive management addressing infection control, nutritional support, and psychological stabilization is essential for achieving complete wound healing.

Keywords: Burns; Case Reports; Nutrition Therapy; Staphylococcus aureus; Wound Healing

LIVING 30 YEARS WITH CEREBELLAR LYMPHOMA - CASE REPORT

Natalija Frančin[1], Stjepan Goronja[1], Tea Elez[1], Duška Petranović[2]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] Clinical Hospital Center Rijeka, Department of Hematology, Rijeka, Croatia

Corresponding author: natalija.francin1@gmail.com

Aim: To present the coexistence of the patient and cerebellar lymphoma and the progress in treatment methods over almost 30 years.

Case report: At the age of 25 (1997), the patient was diagnosed with primary diffuse large B-cell non-Hodgkin lymphoma of the right hemisphere of the cerebellum. The first line of therapy consisted of a combination of surgery, chemotherapy, and radiotherapy, after which she was in remission for 11 years. She experienced relapses in 2008 and 2010, during which she was treated again with chemotherapy and entered remission. A relapse occurred in 2015, when she was treated with radiotherapy, but her neurological symptoms worsened. Considering the MRI stationary changes on the right cerebellar and in the ipsilateral half of the pons, along with partial gliotic-malatogenic changes present on the same side of the cerebellum, which may indicate the consequences of surgery, radiation, chemotherapy, or possible recurrence of lymphoma, the patient is being monitored in an interdisciplinary manner. A relapse then occurred in 2016. The patient is gradually deteriorating neurologically; however, this is due to the effects of treatment. The lymphoma is currently in remission. In 2025, the patient was admitted to the emergency department several times due to falls and transient ischemic attacks. On CT, gliomalation of the right cerebellar hemisphere, pons area, mesencephalon, and cerebellar peduncles persists, along with atrophy of the left cerebellar hemisphere. The patient is currently mobile in a wheelchair, has right-sided weakness and difficulty speaking, which occasionally progresses.

Conclusion: This case highlights the potential for long-term remission in primary cerebellar diffuse large B-cell lymphoma with combined multimodal therapy. Progressive neurological deficits predominantly reflect treatment-related complications rather than active disease. Sustained multidisciplinary surveillance is crucial for optimizing long-term outcomes and managing late neurotoxic effects.

Keywords: Cerebellum; Combined Modality Therapy; Lymphoma; Radiotherapy

PATIENT WITH LEG WEAKNESS CAUSED BY CORONAVIRUS DISEASE 2019 INFECTION: CASE REPORT

Paolo Stroligo[1], Karlo Žepina[2], Ines Diminić-Lisica[3]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[3] University of Rijeka, Faculty of Medicine, Department of Family Medicine, Rijeka, Croatia

Corresponding author: paolostroligo@gmail.com

Aim: The aim of this case report is to present the systematic diagnostic evaluation of a patient with leg weakness. We highlight the complexity of the differential diagnosis and emphasize the crucial steps that led to the correct diagnosis of this neurological condition and its Coronavirus disease 2019 (COVID-19) related etiology.

Case report: Patient R.S. presented to the emergency department due to leg weakness that appeared on the morning of admission. The weakness was most prominent in the lower legs, causing a tendency to fall forward upon standing. He denied other associated sensory symptoms (numbness, burning, or cramps) or history of trauma. R.S. reported experiencing chills, general weakness, decreased appetite, altered taste, diarrhea and a sore throat for the past 3–4 days. Neurological examination was preformed which showed no abnormalities except for a quadriceps reflex graded 1+ bilaterally and an absent triceps reflex bilaterally. Laboratory findings revealed an elevated CRP of 40.9 mg/L. In the differential diagnosis, cerebrovascular insult (CVI), acute polyradiculitis (Guillain-Barré syndrome – GBS), transverse myelitis, lumbar fracture, and COVID-19 infection were considered. Microbiological testing confirmed COVID-19 infection, which could explain the patient's symptoms; however, other possible causes still needed to be excluded. Brain CT showed no abnormalities or significant changes compared with a CT preformed in 2023. A chest and abdominal X-ray showed no significant findings. A thoracic and lumbosacral spine X-ray revealed the same compressive fractures of the Th9 and L1 vertebrae as previously documented. Electromyoneurography (EMNG), performed the next day, showed no signs of polyradiculitis or GBS. On 5th day of hospitalization, MRI was performed, revealing a stable fracture with a larger Schmorl's node in the upper half of the Th12 vertebral body (non-recent). Edema of the Th12–L1 intervertebral discs was noted, without changes in adjacent vertebral bones. Following infectious disease consultation and clinical improvement, the patient was discharged after 6 days of hospitalization with a course of moxifloxacin.

Conclusion: This case report shows an interesting differential diagnostic process where a seemingly "simple" cause produced concerning neurological symptoms. Although the cause was only a COVID-19 infection, this case demonstrates the importance of carefully ruling out more serious underlying causes. Furthermore, it highlights the importance of considering COVID-19 related neurological symptoms even in the absence of classical findings of Guillain-Barré syndrome.

Keywords: Guillain-Barré Syndrome; Medical Emergencies; Muscle Weakness; Neurologic Manifestations; Polyradiculopathy

FROM AN IMPLANTATION TO AN EXPLANATION: A TAVI POP-UP

Lucija Vargović[1], Mia Kontuš[1], Tomislav Jakljević[1,2], Vjekoslav Tomulić[1,2], Davorka Lulić[1,2]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] Clinical Hospital Center Rijeka, Clinic for cardiovascular diseases, Rijeka, Croatia

Corresponding author: vargoviclucija@gmail.com

Aim: This case aims to present the complex management of a high-risk patient with a bicuspid aortic valve undergoing Transcatheter Aortic Valve Implantation (TAVI), highlighting the occurrence of intra-procedural complications and underscoring the importance of timely diagnosis and multidisciplinary intervention in achieving optimal patient outcomes. Transcatheter aortic valve implantation is a procedure involving percutaneous bioprosthetic valve implantation in a severely stenosed aortic valve. This case report highlights the importance of timely diagnosis and management of newly arising complications during the procedure.

Case report: A 76-year-old female patient was hospitalized in December 2023 due to heart failure and severe aortic stenosis. The case was presented to the Heart Team, and TAVI was recommended. However, in June 2024

the patient suffered a major stroke and underwent mechanical thrombectomy. After a period of neurorehabilitation, at the time of the TAVI procedure, there was a significant neurological improvement. Computed tomography (CT) analysis showed a bicuspid aortic valve (BAV) with a severely calcified raphe. During the procedure, after proper placement and towards the end of the procedure, the valve embolized into the ascending aorta. It was snared further into the ascending aorta, and a second valve was introduced. However, due to inadequate expansion and significant residual paravalvular regurgitation caused by the heavily calcified BAV, the implantation was aborted. Following the retraction of the system, the patient experienced sudden cardiac arrest due to cardiac tamponade. Emergency pericardiocentesis with autotransfusion was performed. Echocardiography confirmed aortic dissection and annular injury, prompting surgical aortic valve and ascending aorta replacement.

Conclusion: BAV with severely calcified raphe in high-risk patients represents a challenge in both percutaneous and surgical replacement procedures. Application of theoretical knowledge, combined with technical skills and multidisciplinary collaboration, enables timely intervention, which is critical for reducing mortality and improving outcomes.

Keywords: Aortic Valve Stenosis; Bicuspid Aortic Valve Disease; Transcatheter Aortic Valve Replacement

S6. POSTER SESSION 2

VESSEL-TRACKING SOFTWARE TO ASSIST PROSTATIC ARTERY EMOLIZATION FOR LOWER URINARY TRACT SYMPTOMS: A CASE REPORT

Antonio Perišić[1], Slavica Kovačić[1,2], Boris Bezak[2]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] Clinical Hospital Center Rijeka, Department of Radiology, Rijeka, Croatia

Corresponding author: aperisic@uniri.hr

Aim: Prostatic artery embolization (PAE) is an increasingly accepted minimally invasive treatment for lower urinary tract symptoms (LUTS) secondary to benign prostatic hyperplasia (BPH). The procedure remains technically challenging due to variable pelvic vascular anatomy and the small calibre of prostatic arteries.

Case report: A 75-year-old male presented with dysuria, frequency, nocturia, and significant post-void residual urine, resistant to medical therapy. After recurrent urinary retention, PAE was performed using a vessel-tracking software integrated into the angiographic workstation. The software automatically reconstructed 3D vascular anatomy from cone-beam computed tomography data, identified prostatic artery origins, and allowed virtual path navigation and target confirmation prior to catheterization. This software-assisted workflow reduced fluoroscopy time, contrast load, and overall procedure duration. Bilateral embolization was successfully completed using 250–400 μm microspheres. The patient reported significant symptomatic improvement and reduction in prostate volume on follow-up ultrasound.

Conclusion: Vessel-tracking technology provides real-time 3D guidance and automatic vessel identification, facilitating safe and efficient PAE. Integration of such software into interventional radiology practice enhances precision in complex pelvic anatomy and may improve procedural outcomes in patients with BPH-related LUTS.

Keywords: Benign Prostatic Hyperplasia; Cone-Beam Computed Tomography; Lower Urinary Tract Symptoms; Software

ANCHORED TOO LOW: A TEACHING CASE ON PLACENTA PREVIA

Gaia Wruss[1], Nina Vranić[1], Toni Jurić[1,2], Marko Klarić[1,2]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] Clinical Hospital Center Rijeka, Clinic of Gynecology and Obstetrics, Rijeka, Croatia

Corresponding author: gwruss@student.uniri.hr

Aim: Placenta previa signifies the placenta extending to or over the internal cervical os, thereby preventing vaginal delivery. Usually suspected at 20 weeks and confirmed after the 26th, placenta previa often resolves spontaneously, occurring in 4–5 per 1,000 births. It can result in severe uterine bleeding, the need for cesarean delivery and preterm birth. Among the major risk factors are a history of placenta previa, previous cesarean delivery, multiple gestation, prior uterine surgical procedures, abortion or miscarriage, a male fetus and advanced maternal age, among others. Placenta accreta spectrum is a condition in which the placenta attaches too deep into the uterine wall, preventing it from separating normally after childbirth. It brings a substantially greater risk for complications at delivery. The aim of this case report is to provide a detailed overview of placenta previa through a real clinical case, highlighting key learning points for improving maternal and fetal outcomes.

Case report: A 35-year-old pregnant woman was hospitalized at the Clinic for gynecology and obstetrics at 36+0 weeks gestation due to a previously diagnosed placenta previa. Among risk factors for placenta previa, this patient had a cesarean delivery four years prior, as well as a previous miscarriage. Both the combined screening test and the non-invasive prenatal test (NIPT) performed at 13 weeks were within normal range. Laboratory tests showed mildly elevated leukocytes and C- reactive protein. Urinalysis showed elevated leukocyte esterase and bacteria, so cefazoline (1g i.v.) was prescribed to treat urinary tract infection. Ultrasound findings showed that the placenta was located anteriorly and low, entirely situated in the lower uterine segment, with possible invasion into the anterior uterine wall, which could suggest placenta accreta. One week after hospitalization, following the completion of 37 weeks of gestation, a decision was made to deliver by cesarean section. It was noted that through the scar of the previous uterotomy, placental tissue was visible in an area of approximately 4×3 cm. As expected, the placental tissue was entirely located in the lower uterine segment and completely occupied it. On the third day postpartum, the puerpera was discharged with her newborn in good general condition, with prescribed oral iron capsule supplementation.

Conclusion: Placenta previa is a rare condition associated with a high risk of severe antepartum and intrapartum hemorrhage as well as preterm birth. However, favorable maternal and fetal outcomes can be achieved through early detection and intensive prenatal management.

Keywords: Cesarean Section, Repeat; Placenta Accreta; Placenta Previa; Risk Factors

WHEN SELF-MEDICATION TURNS DANGEROUS: RECURRENT MRSA SEPTIC ARTHRITIS IN IATROGENIC CUSHING'S SYNDROME – CASE REPORT

Tajana Kukolj[1], Domagoj Vrbanić[1], Ngo Duc Hiep[2]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] Cho Ray Hospital, Department of Emergency Medicine, Ho Chi Minh City, Vietnam

Corresponding author: tajana.kukolj@gmail.com

Aim: The aim is to present the clinical course of recurrent MRSA septic arthritis in a patient with iatrogenic Cushing's syndrome resulting from uncontrolled and prolonged corticosteroid use.

Case Report: A 60-year-old man presented to the emergency department with pain, swelling, and redness of the right shoulder joint. One month earlier, he had been hospitalized for septic arthritis with methicillin-resistant *Staphylococcus aureus* (MRSA) isolated. After a short period of improvement, the symptoms recurred. In his medical history, the patient reported previous treatment for gout, along with self-initiated use of additional medications and traditional remedies. Consequently, clinical features of iatrogenic Cushing's syndrome developed (moon face, petechiae, striae rubrae, central obesity), indicating long-term corticosteroid use. On admission, he was subfebrile with laboratory evidence of infection. Ultrasound and clinical examination suggested recurrent joint infection. Surgical evacuation of purulent material, excision of infected tissues, and drainage were

performed. Samples were sent for microbiological and histopathological analysis. Postoperatively, the patient remained hemodynamically stable. Antimicrobial therapy was continued, and endocrinological evaluation was planned.

Conclusion: This case highlights the importance of caution when prescribing and administering corticosteroids, as well as the risks of self-medication. Prolonged, uncontrolled corticosteroid use can lead to immunosuppression and the development of severe infections such as recurrent septic arthritis. A multidisciplinary approach is essential for successful treatment and prevention of complications. Furthermore, this case emphasizes the need to educate patients about the dangers of unsupervised medication use outside the regulated healthcare system.

Keywords: Arthritis; Infectious; Cushing syndrome; Glucocorticoids; Methicillin-resistant staphylococcus aureus; Self medication

DIFFICULT PATH TO STABILITY – FROM TOTAL TO TUMOUR ENDOPROTESIS. CASE REPORT.

Natalija Grdanjski[1], Lucija Mitrović[1], Marina Tvrdeić-Šantek[2]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] Clinical Hospital Sv. Duh, Department of Orthopaedics, Zagreb, Croatia

Corresponding author: natalija.grdanjski@gmail.com

Aim: Gonarthrosis is a degenerative disease of the articular cartilage. The leading symptom is pain, decreased mobility and function of the joint. In advanced forms (stage IV), the treatment of choice is the implantation of a total knee arthroplasty (TKA) but possible complications are prosthetic fracture, infection and mechanical aseptic loosening.

Case report: 76-year-old woman, with normal body mass index, history of arterial hypertension and tendency toward frequent urinary tract infections first time came to orthopedic specialist 17 years ago because of severe knee pain and difficulty walking. A total knee arthroplasty (TKA) of the right knee was indicated. But, one year later due to onset symptoms on the opposite side, TKA of the left knee was performed as well. Ten years later after bilateral TKA implantation the patient developed pain in the left knee with occasional effusions and reduced mobility. During multiple outpatient check-ups, joint aspiration, laboratory testing (inflammatory parameters, uric acid) and analysis of the punctures were performed. All tests were normal, but the radiograph showed signs of aseptic loosening of the tibial and femoral components of the prosthesis. Bone scintigraphy confirmed increased activity in the left knee area indicating loosening or infection of the prosthesis, which is why explanation of the prosthesis with collection of samples for microbiological analysis and subsequent implantation of a revision prosthesis was indicated. The bacteriological findings were negative, and postoperatively the patient underwent rehabilitation according to the standard protocol. In 2025, after a fall, the patient sustained a complex periprosthetic fracture of the left femur with a significant bone defect. A tumour endoprosthesis was implanted as the only option that allowed for the replacement of lost bone mass and joint stabilization. The procedure went smoothly, and postoperative management included protocol-based rehabilitation, thromboprophylaxis and broad-spectrum antibiotic therapy due to the presence of an extensive hematoma. Three months postoperatively, patient walked with crutches, without any pain.

Conclusion: Implantation of a TKA reduces symptoms and restores mobility in patients with advanced gonarthrosis but due to complications precise differential diagnosis of aseptic versus septic loosening of the endoprosthesis are crucial for the correct choice of therapeutic approach. Reconstruction with a tumour endoprosthesis allows stabilization and represents an optimal solution in the absence of other methods that would ensure satisfactory biomechanical function.

Keywords: Knee Osteoarthritis; Periprosthetic Fractures; Prostheses and Implants; Total Knee Arthroplasty

MELANOMA OF UNKNOWN PRIMARY WITH UNCOMMON METASTATIC SITES – A CASE REPORT

Roko Pirović[1], Aleksandra Pirjavec Mahić[1,2], Luka Brekalo[1], Niko Kirinčić[1], Nika Sučić[3], Eva Starešinić[3]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] Clinical Hospital Center Rijeka, Surgery Clinic, Rijeka, Croatia
[3] University of Zagreb, Faculty of Medicine, Zagreb, Croatia

Corresponding author: rpirovic@student.uniri.hr

Aim: Melanoma of unknown primary (MUP) is a well-defined clinical entity accounting for approximately 3.2% of all melanoma diagnoses, characterized by metastatic melanoma in subcutaneous tissue, lymph nodes (LNs), or visceral organs without a detectable primary cutaneous, ocular, or mucosal lesion. This report presents two cases of MUP with uncommon metastatic presentations – supraclavicular lymph node and cardiac involvement – to highlight diagnostic challenges and underscore the importance of a multidisciplinary approach in managing this distinct disease entity.

Case report: Two patients, a 66-year-old female and a 51-year-old male, were referred to our institution for evaluation of clinically suspicious findings. In the first patient, a palpable left supraclavicular mass was confirmed as melanoma by cytological examination (HMB-45 positive). In the second patient, a cardiac metastasis of melanoma was discovered intraoperatively during cardiac surgery for a suspected myxoma. Comprehensive dermatological evaluation, including full-body skin examination and detailed history, failed to identify a primary tumor in either case. Previous histopathological analysis of multiple atypical moles in both patients had not demonstrated invasive melanoma but rather showed lesions with regression features or severe atypia. The treatment approach was focused on managing the metastatic disease, involving immunotherapy and radiotherapy for the first patient, and oncological evaluation for the second patient, who also had comorbid alcoholic liver cirrhosis.

Conclusion: MUP most commonly presents with LN involvement, often in the axillary region, though visceral metastases – such as cardiac involvement – are also documented. Classified as AJCC stage III (LN/subcutaneous disease) or stage IV (visceral disease), MUP paradoxically demonstrates improved overall survival compared to stage-matched melanomas with known primaries, potentially due to immune-mediated regression of the primary tumor. Management mirrors that of known-primary melanoma: aggressive surgical resection for stage III disease and multimodal therapy (surgery, systemic therapy, radiotherapy) for stage IV. These cases emphasize the need for thorough diagnostic evaluation to exclude non-cutaneous primaries and a personalized, multidisciplinary strategy to optimize outcomes in MUP patients.

Keywords: Diagnosis; Melanoma; Neoplasm Metastasis; Unknown Primary

SEVERE THERMAL INJURY DUE TO ALCOHOL EXPOSURE RESULTING IN UPPER EXTREMITY AMPUTATION: CASE REPORT

Domagoj Vrbanić[1], Tajana Kukolj[2], Ngo Duc Hiep[2]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] Cho Ray hospital, Department of Burns and Reconstructive Surgery, Ho Chi Minh City, Vietnam

Corresponding author: vrbanic.domagoj@gmail.com

Aim: The aim of this case report is to present a rare and life-threatening thermal injury indirectly associated with alcohol consumption, and to emphasize the assessment and emergency management of burns in patients with altered consciousness.

Case report: We report a case of a 75-year-old man who fell asleep for 20 minutes on a stove while distilling alcohol and was subsequently transported by ambulance to Cho Ray Hospital. On arrival he had impaired consciousness, while clinical history was obtained from family members by phone. Initial management included vital signs and wound assessment. Examination revealed extensive fourth-degree burns involving the anterior left torso, back, and the entire left arm, which was covered with circumferential eschar. The patient was promptly admitted to the Department of Plastic Surgery where he underwent urgent amputation of the affected arm and debridement of adjacent necrotic tissue. During admission the patient received supportive care and after ten days

the patient underwent a second debridement; seven days later he was discharged home with outpatient follow-up and a plan for rehabilitation.

Conclusion: Superficial burns are typically extremely painful; however, when patients have altered consciousness and the heat source is not removed, superficial injuries can rapidly progress to deep, full-thickness burns with irreversible tissue loss and life-threatening complications. Proper management of such burns requires a multidisciplinary team providing extensive debridement and supportive therapy in critical care units.

Keywords: Alcohol drinking; Amputation; Burns; Debridement

MANAGEMENT OF NEWLY DIAGNOSED DIABETES IN A SEDENTARY MIDDLE-AGED PATIENT – CASE REPORT

Fran Peršić[1], Sanja Klobučar[1,2]

[1] Faculty of Medicine Rijeka, University of Rijeka, Rijeka, Croatia
[2] Department of Endocrinology, KBC Rijeka, Rijeka, Croatia

Corresponding author: fpersic1@uniri.hr

Aim: In this case report, we aim to highlight the use of early tirzepatide therapy in the treatment of newly diagnosed diabetes in a patient with multiple metabolic risk factors. This therapeutic approach, combined with lifestyle intervention, is an emerging option for improving metabolic control, with its reliability and effectiveness continually progressing through advances in modern incretin-based pharmacology.

Case report: A 58-year-old male presented with elevated fasting glucose, weight gain, reduced physical activity, and irregular dietary habits. His medical history included hypertension and dyslipidemia. Laboratory testing confirmed newly diagnosed diabetes mellitus, hypertriglyceridemia, and mildly elevated liver enzymes. While being on standard cardiometabolic therapy, the patient also reported fatigue, daytime sleepiness and decreased libido, which were associated with low testosterone levels. Tirzepatide therapy was selected as the method of treatment for his metabolic condition and was introduced with gradual dose escalation together with medical nutrition counseling and increased physical activity. Over the following months, fasting glucose and hemoglobin A1c improved significantly, liver enzymes and lipid values normalized, and blood pressure control was enhanced. The patient reported improved wellbeing, weight reduction and better adherence to lifestyle changes, while testosterone levels increased in parallel with metabolic improvement.

Conclusion: Early initiation of tirzepatide therapy in newly diagnosed diabetes may achieve broad metabolic benefits, improving glycemic, hepatic, and hormonal parameters. This case supports its potential role as a comprehensive treatment option in patients with multiple metabolic risk factors.

Keywords: Diabetes Mellitus; Hypogonadism; Metabolic Syndrome; Obesity; Tirzepatide

THE USE OF LIVER SUPPORT SYSTEM DEVICES IN ACUTE LIVER FAILURE AS A CONSEQUENCE OF METASTATIC MELANOMA IN THE LIVER: CASE REPORT

Matea Starešinić[1], Ivana Mikolašević[1,2,3], Marin Golčić[1,2]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] Clinical hospital Center Rijeka, Tumor Clinic, Rijeka, Croatia
[3] Clinical Hospital Center Rijeka, Department of Gastroenterology, Rijeka, Croatia

Corresponding author: staresinicmatea1@gmail.com

Aim: Liver support systems should be included as a new step for treating patients with metastatic melanomas in liver.

Case Report: A 38-year-old patient enters the clinic with an irregular, variably pigmented lesion on the upper left part of his back without any clinical symptoms of disease. A biopsy of this lesion confirmed a superficial melanoma with metastases in the left axilla. The next step in treatment, decision-making was to check if the patient had a positive BRAF mutation, which in this patient turned out to be positive. Based on this information, aggressive immunotherapy with a combination of ipilimumab and nivolumab was initiated. Seventeen days after

the start of therapy, the patient's clinical condition worsened significantly; he developed a fever, diarrhea, began coughing, experienced abdominal pain and felt extremely weak. Physical examination revealed pain in the upper right quadrant, accompanied by elevated laboratory values of liver transaminases and cholestatic parameters. Three days later, a chest X-ray showed pneumonia in the right lobe, for which oral therapy with amoxicillin and clavulanic acid was initiated. Due to the presence of pneumonia, colitis and suspected hepatitis, immunotherapy and antibiotics were discontinued, and methylprednisolone was introduced. Methylprednisolone helped with the colitis, but liver transaminases remained markedly elevated, alongside worsening symptoms of dyspnea. The patient underwent a CT pulmonary angiography, which revealed nodular opacities in the lungs and pathologically enlarged lymph nodes in the mediastinal, retro pectoral and axillary regions. An abdominal MRI was also performed, confirming metastases in the liver, spleen and thoracic spine. As a result of corticosteroid therapy, the patient developed insufficiency of the liver's secretory, synthetic, and metabolic functions. In agreement with the patient and his family, therapy with continuous venovenous hemodiafiltration and TPO therapy was initiated. Forty-eight hours after this therapy, the patient's liver function tests improved significantly. Therapy with dabrafenib and trametinib was successfully introduced. Two months after new therapy, CT and MRI scans revealed a significant reduction in lung, liver and spleen metastases, as well as an exceptional improvement in the liver function, which returned to reference values.

Conclusion: Liver failure was caused by multiple liver metastases as well as inadequate treatment. The successful return to normal liver function was achieved through the use of liver support system, which allowed the introduction of new therapy with dabrafenib and trametinib. Therapy using liver support system represent a new step in the treatment of liver metastases in oncology.

Keywords: Hepatic failure; Immunotherapy; Liver, Artificial; Melanoma

BEYOND ASSUMPTIONS: RARE AV MALFORMATION, RENAL LYMPHOMA, AND CARDIAC TUMOR, A CASE REPORT

Mara Paravić[1], Kristian Krpina[1,2]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] Clinical Hospital Center Rijeka, Department of Urology, Rijeka, Croatia

Corresponding author: mparavic@uniri.hr

Aim: The aim of this case report is to present a rare combination of a renal lymphoma, a large pelvic arteriovenous malformation, and an incidental cardiac tumor, each with an incidence below 1 in 100,000 population. It highlights the diagnostic and therapeutic challenges when initial clinical assumptions are overturned.

Case report: A 53-year-old woman presented with abdominal and pelvic pain. Abdominal ultrasound revealed a round, hypoechoic lesion of the right kidney measuring 2–3 centimetres, prompting referral for further urological evaluation. Computed tomography (CT) confirmed a solid renal mass suspicious for neoplasm, along with multiple pulmonary nodules. In addition, a possible arteriovenous malformation (AVM) in the region of the right ovarian fossa was suspected, leading to further evaluation with CT angiography and digital subtraction angiography (DSA) of the pelvis in preparation for surgical planning. Angiography demonstrated a large AVM approximately 10 cm in length, with arterial supply from the ovarian artery and a 5 cm aneurysmal dilatation. The ovarian vein was diffusely dilated and drained into the right renal vein. The AV malformation was successfully embolized. Subsequently, enucleation of the renal mass, clinically suspected to be adenocarcinoma, was performed, and in the same surgical procedure, the efferent limb of the AV malformation was occluded. Surprisingly, histopathology revealed peripheral B-cell non-Hodgkin lymphoma. Following initiation of hematologic therapy with rituximab, one month after the initial surgery, the patient developed renal hemorrhage with gross hematuria and clot formation, necessitating urgent nephrectomy. In the remaining renal tissue, an incidental benign interstitial tumor was found. The postoperative course after nephrectomy was complicated by persistent fever despite antibiotic therapy. The etiology of the fever remained undetermined, although imaging demonstrated a right atrial mass, with differential diagnosis including myxoma versus metastasis. However, following cardiac surgery, pathology confirmed a papillary elastofibroma. After completion of hematologic treatment, follow-up PET-CT showed no evidence of active or progressive malignancy. Surgical treatment was reconsidered; Due to spontaneous regression of the AV malformation, planned surgery was not required anymore.

Conclusion: This case illustrates the importance of comprehensive diagnostic evaluation and multidisciplinary management in patients with rare and unexpected findings. It emphasizes that individualized therapeutic strategies are essential for optimal patient outcomes.

Keywords: Arteriovenous Malformations; Heart Neoplasms; Kidney Neoplasms; Lymphoma

ENLARGED CARDIAC SILHOUETTE CAUSED BY EXCESSIVE PERICARDIAL AND MEDIASTINAL FAT: A RARE CAUSE OF ARRHYTHMIAS – CASE REPORT

Antonela Ožanić[1], Magdalena Radovčić[1], Ivana Peršić[1], Matko Spicijarić[2], Koraljka Benko[2]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] Clinical Hospital Center Rijeka, Clinic for Cardiovascular Diseases, Rijeka, Croatia

Corresponding author: antonela.ozanic123@gmail.com

Aim: To present a rare case of arrhythmias associated with excessive pericardial and mediastinal fat, emphasizing its potential role in arrhythmogenesis.

Case report: A 68-year-old male was referred for cardiology evaluation after an incidental finding of an enlarged cardiac silhouette on chest X-ray. His medical history included hypertension, hyperlipoproteinemia, obesity, smoking, and exertional dyspnea. On physical examination, the only remarkable findings were obesity and mild shortness of breath on exertion. Electrocardiogram showed sinus rhythm with occasional premature ventricular complexes (PVCs), prompting initiation of nebivolol and further evaluation. Echocardiography demonstrated biventricular enlargement, preserved left ventricular ejection fraction, and severe pulmonary hypertension. A treadmill stress test and 24-hour Holter monitoring confirmed exercise-induced PVCs and occasional premature supraventricular complexes (PSVCs). Cardiac magnetic resonance imaging demonstrated significant pericardial fat pericardial fat, biatrial enlargement, and a large hiatal hernia with herniation of abdominal fat into the posterior mediastinum. Serial Holter monitoring documented fluctuating PVC burdens, peaking at over 32,000 daily. Additional comorbidities included obstructive sleep apnea (OSA), chronic obstructive pulmonary disease (COPD), and progressive weight gain. The patient declined surgical hernia repair and was managed pharmacologically. Treatment with metoprolol followed by flecainide led to a significant reduction in arrhythmic burden and improvement of symptoms.

Conclusion: This case illustrates a rare potential cause of arrhythmias: excessive pericardial and mediastinal fat. Differential diagnoses such as structural heart disease and coronary artery disease were excluded. The presence of ectopic fat and a large hiatal hernia may have contributed to arrhythmogenesis through mechanical and metabolic effects. Recognition of fat-associated arrhythmic substrates is crucial in similar patients, especially when classical cardiac pathology is absent. Further studies are needed to clarify the role of ectopic fat in arrhythmia development and guide management strategies, particularly considering emerging evidence on the effect of SGLT2-inhibitors on reducing epicardial adipose tissue as a novel therapeutic option. This case also highlights the importance of addressing fat-related cardiac risks amid the global obesity pandemic.

Keywords: Adipose Tissue, Epicardial; Arrhythmias, Cardiac; Cardiomegaly; Obesity

NAVIGATING THE CHALLENGES OF AN ANOMALOUS LEFT CORONARY ARTERY WITH SEVERE STENOSIS: A CASE REPORT

Antonela Ožanić[1], Magdalena Radovčić[1], Matko Spicijarić[2], Vjekoslav Tomulić[2]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] Clinical Hospital Center Rijeka, Clinic for Cardiovascular Diseases, Rijeka, Croatia

Corresponding author: antonela.ozanic123@gmail.com

Aim: To report a complex case of an anomalous left coronary artery (LCA) with severe stenosis, highlighting the diagnostic and management challenges this condition presents.

Case report: A 60-year-old male presented with exertional chest pain persisting for several days. Initial clinical, laboratory, and ECG findings were unremarkable. His history included left nephrectomy for rhabdo-

myosarcoma, prostate adenoma surgery, and multiple sclerosis. Due to persistent symptoms, a treadmill stress test was performed and returned positive. Transthoracic echocardiography showed no structural abnormalities. Coronary angiography revealed an anomalous origin of the LCA from the right coronary sinus, with 95% stenosis in the proximal left anterior descending artery (LAD) and additional atherosclerotic lesions. Multi-slice computerized tomography (CT) coronary angiography confirmed the anomalous interarterial course of the LCA passing between the aorta and pulmonary artery. Stress cardiac magnetic resonance imaging (MRI) demonstrated reversible myocardial perfusion deficits. The patient underwent percutaneous coronary intervention (PCI) with drug-eluting stent placement in the LAD. Six months later, he was re-hospitalized for unstable angina. Angiography showed new stenoses beyond the previously placed stent. These were treated with balloon angioplasty, drug-coated balloon (DCB) angioplasty, and spot stenting. Despite prior interventions, the patient remained symptomatic, warranting a stress cardiac MRI. It demonstrated persistent anterior and lateral wall ischemia. Surgical unroofing of the left main coronary artery with new ostium creation was performed. The postoperative course was uneventful aside from transient post-pericardiotomy syndrome. On follow-up, the patient remained angina-free.

Conclusion: This case illustrates the diagnostic complexity of concurrent coronary artery anomaly and atherosclerotic disease. The presence of an anomalous LCA, a rare congenital anomaly associated with increased ischemic risk, was only revealed through multimodal imaging. This case underscores the importance of considering congenital anomalies in patients with atypical ischemic symptoms and highlights the need for a tailored, multidisciplinary approach combining interventional and surgical strategies. Further studies are warranted to evaluate long-term outcomes of such combined treatment modalities.

Keywords: Anomalous Left Coronary Artery; Coronary Angiography; Coronary Artery Disease; Percutaneous Coronary Intervention

DIAGNOSTIC COMPLEXITY OF INSULAR EPILEPSY: AUTONOMIC SYMPTOMS MIMICKING SYSTEMIC EVENT

Ivana Krajina[1], Paula Stepanić[1], Brian Kongs[2]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] University of Kansas Medical Center, Department of Neurology, Kansas, USA

Corresponding author: ikrajina@uniri.hr

Aim: This case report presents a diagnostically challenging and rare case of a young woman with episodes of autonomic dysfunction and unresponsiveness who was ultimately diagnosed with insular epilepsy. Insular epilepsy is an uncommon focal epilepsy syndrome that often mimics temporal or frontal lobe epilepsy due to its highly variable semiology as well as its deep location complicating scalp electrographic monitoring. The case highlights the difficulty in distinguishing insular seizures from other focal epilepsies, the importance of recognizing catamenial patterns in women of reproductive age, and the diagnostic evaluation for possible autoimmune epilepsy.

Case report: A 33-year-old woman was admitted two days after a seizure-like episode characterized by cyanosis, foaming at the mouth, facial grimacing and unresponsiveness. She sustained a lateral tongue bite and urinary incontinence. In the preceding weeks, she reported intermittent fevers, chills, fatigue, nausea, vomiting, somnolence, non-bloody diarrhea, photophobia, and speech difficulties. She denied prior seizures or recent infections. Significant unintentional weight loss (9 kg over 2 months) alongside possible psychiatric changes suggested a possible systemic or autoimmune process. Workup included continuous video-EEG, MRI, lumbar puncture, and CT chest/abdomen/pelvis to rule out malignancy. During hospitalization, she experienced recurrent episodes of facial flushing, cold extremities, tachycardia, hypotension (BP 60/40 mmHg), and tachypnea in a cyclical pattern. Video-EEG captured a left temporal seizure with facial flushing, vocalizations, and "chapeau de gendarme", lasting about one minute with autonomic symptoms prior to scalp EEG changes. Lacosamide was initiated and uptitrated to 200mg, with zonisamide 200mg added. Levetiracetam was avoided due to behavioral side effects and history of anxiety and depression. Insular epilepsy was suspected based on autonomic symptoms (flushing, tachycardia, throat closing sensation, hypotension) and semiology suggesting spread into the temporal lobe with loss of awareness and ictal pout. MRI showed increased T2/FLAIR signal in the left hippocampus, rais-

ing concern for possible autoimmune encephalitis, however APE2 score of 3 and ACES score of 1 suggested against this etiology. High-dose methylprednisolone was administered empirically, without significant clinical improvement. Lumbar puncture was unremarkable. Later, her fiancé reported episodes of staring spells around her menstrual cycle, consistent with possible catamenial epilepsy.

Conclusion: This case illustrates the importance of history in the diagnosis and clarification of epilepsy and its potential autoimmune etiology, as well as establish a catamenial influence. Insular epilepsy remains an uncommon localization and understanding the nuances with appropriate diagnosis is imperative. Additionally, establishing a catamenial component offers unique treatment strategies that can allow for improved seizure control for these patients.

Keywords: Catamenial; Epilepsy Flushing; Hypotension; Insular

FROM PREECLAMPSIA TO ECLAMPSIA IN 48 HOURS: THE IMPORTANCE OF TIMELY MANAGEMENT – A CASE REPORT

Nina Vranić[1], Gaia Wruss[1], Toni Jurić[1,2], Marko Klarić[1,2]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] Clinical Hospital Center Rijeka, Clinic of Gynecology and Obstetrics, Rijeka, Croatia

Corresponding author: nvranic@uniri.hr

Aim: Eclampsia is a life-threatening complication of pregnancy, defined by the onset of seizures or loss of consciousness in pregnant women with previously diagnosed preeclampsia or gestational hypertension. The condition can lead to placental abruption, disseminated intravascular coagulation, pulmonary edema, acute renal failure, premature birth or death of the mother and the fetus. Eclampsia increases the risk of developing chronic hypertension and the recurrence of preeclampsia or eclampsia in subsequent pregnancies. This case report aims to highlight the importance of timely management in order to prevent maternal and fetal complications.

Case report: A 25-year-old primigravida was admitted to the Department for gynaecology and obstetrics with a diagnosis of preeclampsia at 37 weeks of gestation. The patient peaked at 160/110 mmHg, while laboratory analyses revealed mild anemia and urinalysis demonstrated massive proteinuria with an elevated protein-to-creatinine ratio (368 mg/mmol/L). At admission, the treatment with 20mg of nifedipine was administered and the blood pressure was subsequently normalised. Considering the term pregnancy, preeclampsia and possible complications of the disorder, labor was induced using a prostaglandin vaginal gel, resulting in the vaginal delivery of a healthy newborn. The early postpartum period was uneventful. However, on the second day, the puerperal woman developed an eclamptic seizure. The patient developed generalized tonic-clonic convulsions, after which she became unconscious. On examination, her blood pressure was 205/120 mmHg, heart rate 163/min, and oxygen saturation 66%. An emergency CT scan was performed, revealing no abnormal findings. Oxygen therapy was administered, along with 10mg of diazepam and 2g of magnesium sulfate intravenously. The patient was administered to the Intensive care unit. On the first day of intensive care, the patient was placed on mechanical ventilation and sedated with propofol and sufentanil, while continuing magnesium sulfate and nifedipine therapy, with the addition of intravenous labetalol. On the following day, she was successfully extubated and transferred back to the gynaecology ward, where she remained hospitalized for an additional 11 days. After discharge, the patient was regularly followed by a nephrologist and remained normotensive.

Conclusion: Eclampsia is rare condition that may result in acute or long-term complications, and can be fatal for both the mother and the fetus. For this reason, timely management, including supplemental oxygen, antihypertensive therapy, benzodiazepines, and magnesium sulfate, are essential for optimal maternal and fetal outcomes.

Keywords: Critical care; Eclampsia; Hypertension, Pregnancy-Induced; Magnesium Sulfate; Pre-eclampsia

BILATERAL FACIAL NERVE PALSY FOLLOWING RHOMBOENCEPHALITIS

Lucija Mitrović[1], Katarina Paparić Ćopić[2], Natalija Grdanjski[3], Karla Kleščić[4]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] County Special Hospital Insula, Department of Physiatry, Rab, Croatia

Corresponding author: lucijamitrovic3@gmail.com

Aim: To present a rare case of bilateral facial nerve palsy caused by rhomboencephalitis and to highlight its diagnostic and therapeutic challenge

Case report: A previously healthy adult developed acute onset of dizziness, headache, diplopia, and progressive facial weakness. Neurological examination revealed bilateral lower motor neuron facial palsy and mild dysarthria. Brain MRI demonstrated T2/FLAIR hyperintensity in the pontine and medullary regions consistent with rhomboencephalitis. Extensive laboratory and microbiological workup, including serologic and CSF analysis, was performed, but no definitive infectious agent was identified. The patient received empirical antimicrobial and antiviral therapy, followed by corticosteroids and intensive physical rehabilitation. During hospitalization, the patient's condition stabilized, with gradual improvement of cranial nerve function over several months. Intensive outpatient physiotherapy led to partial recovery of bilateral facial movement, improvement in eye closure, and normalization of speech and swallowing. Follow-up neuroimaging demonstrated resolution of brainstem lesions without new pathology.

Conclusion: This case underlines the diagnostic difficulty of rhomboencephalitis and the importance of early recognition of brainstem involvement in patients Corresponding with bilateral facial nerve palsy. Multimodal treatment, including prompt empirical therapy and long-term neurorehabilitation, can significantly improve functional outcomes. Further research is needed to clarify the pathophysiological mechanisms and optimal management strategies in idiopathic or post-infectious rhomboencephalitis.

Keywords: Bilateral facial palsy; Cranial neuropathies; Encephalitis; Facial nerve diseases; Neurorehabilitation

EFFICACY OF FINERENONE IN REDUCING ALBUMINURIA IN PATIENTS WITH DIABETIC NEPHROPATHY

Rajna Međimurec[1], Tamara Turk Wensveen[1,2,3]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] Thalassotherapia, Center for Diabetes, Endocrinology and Cardiometabolism, Opatija, Croatia [3] Clinical Hospital Center Rijeka, Department of Endocrinology, Diabetes and Metabolic Disorders, Rijeka, Croatia

Corresponding author: rajna.medimurec@gmail.com

Aim: Diabetic nephropathy is a chronic kidney disease characterized by persistent albuminuria and progressive decline in renal function, commonly affecting adults with type 2 diabetes. It is one of the leading causes of end-stage renal disease. The standard of care for chronic kidney disease associated with type 2 diabetes includes the use of ACE inhibitors, ARBs, SGLT2 inhibitors and GLP-1 agonists. A newer drug - finerenone, a selective non-steroidal mineralocorticoid receptor antagonist, has been shown to reduce renal inflammation and fibrosis, thereby slowing disease progression. The aim of this study was to investigate the effect of finerenone on albuminuria and the recovery of estimated glomerular filtration rate (eGFR) in patients with diabetic nephropathy.

Materials and Methods: This retrospective study analyzed the clinical records of nine patients diagnosed with diabetic nephropathy who received finerenone between July 2024 and May 2025. Parameters analyzed included albuminuria, eGFR, potassium, creatinine, and other medications or comorbidities of the patient. Data were collected prior to initiating finerenone, after one month of treatment, and again during follow-up between three and nine months of therapy.

Results: After one month of finerenone treatment, all patients presented with a reduction in albuminuria, with an average decrease of 49.43%. Patients with a shorter duration of diabetes (up to 2 years) experienced a greater reduction in albuminuria, averaging 82.99%, suggesting a higher potential for renal recovery when treatment is initiated earlier in the disease course. eGFR values in all patients remained stable throughout follow-up, indicating no evidence of accelerated decline. Finerenone was well tolerated, and no cases of hyperkalemia or treatment discontinuation were observed.

Conclusion: Finerenone therapy was associated with a significant reduction in albuminuria in patients with diabetic nephropathy, particularly in those with a shorter duration of diabetes. These findings highlight the importance of early treatment in preserving kidney function. Although limited by its small sample size, this research is consistent with larger clinical trial data and suggests that finerenone represents a promising therapeutic option for managing diabetic nephropathy.

Keywords: Albuminuria; Diabetic nephropaties; Finerenone; Hyperkalemia

A COMPLETE UTERINE SEPTUM DOES NOT NECESSARILY AFFECT PREGNANCY OUTCOME: CASE REPORT

Leonarda Šmigmator[1], Lara Maria Stričak[1], Maja Banović[1,2]

[1] University of Zagreb, Faculty of Medicine, Zagreb, Croatia
[2] University Hospital Zagreb, Department of Obstetrics and Gynecology, Zagreb, Croatia

Corresponding author: leonarda.131@gmail.com

Aim: Müllerian anomalies are congenital malformations of the female reproductive tract that appear during embryologic development. A septate uterus is the most common anomaly and is associated with reduced fertility, and increased miscarriage and preterm birth rates. Hysteroscopic septum resection is commonly performed in our setting prior to pregnancy.

Case report: We report two cases of patients with a complete uterine septum and successful pregnancies. A 30-year-old healthy patient presented with an incidental finding of multiple vaginal polyps during a gynecological examination. Her history showed one uncomplicated spontaneous pregnancy and vaginal delivery of a healthy term infant. Her postpartum course was without difficulties. Three-dimensional ultrasound after delivery showed a complete uterine septum. Excision of the polypoid structures was performed together with a diagnostic hysteroscopy to confirm the Müllerian anomaly. Histology of the polyp structures showed connective tissue remnants that could be explained as an intrapartum torn vaginal septum.

The other patient was a healthy 35-year-old female who was referred to our clinic for hysteroscopic polypectomy. Her history revealed one uncomplicated spontaneous pregnancy and vaginal delivery of a healthy term infant. Her postpartum course was also without difficulties. The diagnosis of a complete uterine septum was made a year after delivery during the workup for prolonged menstrual bleeding. The patient underwent hysteroscopic polypectomy, and the described Müllerian anomaly was confirmed.

Conclusions: Various studies have assessed the efficacy of hysteroscopic uterine septum removal in increasing fertility and preventing preterm births. The patients with a complete uterine septum presented in this report had no fertility, pregnancy, delivery, or postpartum issues, suggesting that a uterine septum alone does not necessarily cause infertility, and its removal may be less beneficial for optimal pregnancy outcomes than previously thought.

Keywords: Uterine Septum; Hysteroscopy; Müllerian Duct Anomalies; Pregnancy Outcome

OPTIMAL OUTCOME OF FRONTAL BONE RECONSTRUCTION IN PEDIATRIC PATIENT USING 3D PRINTED CUTTING GUIDES AND AN IMPLANT MOLD: A NEXT-GENERATION PERSONALIZED SURGERY

Tomislava Tretinjak[1], Tamara Stanojlović[1], Nenad Koruga[1,2], Vedran Zubčić[1,3], Vjekoslav Kopačin[1,4]

[1] J. J. Strossmayer University of Osijek, Faculty of Medicine, Osijek, Croatia
[2] University Hospital Center Osijek, Department of Neurosurgery, Osijek, Croatia
[3] University Hospital Center Osijek, Department of Maxillofacial and Oral Surgery, Osijek, Croatia
[4] University Hospital Center Osijek, Department of Diagnostic and Interventional Radiology, Osijek, Croatia

Corresponding author: tomislava.tretinjak@gmail.com

Aim: This case aims to provide an insight into the production process of personalized 3D printed surgical guides and molds for matching cranial implants. Here, we present a case of a 16-year-old patient diagnosed with eosinophilic granuloma located on the right half of the frontal bone and the roof of the orbit.

Case Report: Eosinophilic granuloma (EG) is a localized form of Langerhans cell histiocytosis. In the pediatric population, the most common site of the lesion is the skull. Not all EGs require surgical treatment, but when the lesion compromises the integrity of the bones, cranioplasty is indicated.

The patient presented with a tumefaction sensitive to touch in the temporal region, with no other symptoms. After examination, further diagnostic approach included head Magnetic Resonance Imaging (MRI) and ultrasound-guided puncture of the bone lesion. A patient-specific, computer-aided design (CAD) 3D model of the patient's skull was generated from *Digital Imaging and Communications in Medicine (DICOM)* data of the computed tomography (CT) head scan, using an open-source software 3D Slicer by a radiologist. The model was 3D printed using a *Fused Deposition Modeling* (FDM) 3D printer Prusa i3 MK3, with polylactic acid (PLA) filament. The skull model was used for preoperative planning and determining the osteotomy margins. Next, the patient-specific surgical cutting guides for osteotomy and a matching implant mold were created with the open-source programs Blender and Meshmixer. For the 3D printing of the cutting guides and mold, a stereolithography technology-based 3D printer, Formlabs Form 2, and biocompatible resin BioMed Clear were used. A neurosurgeon and maxillofacial surgeon performed precise osteotomy in an inconvenient anatomical area of the right frontal bone: the superior orbital wall and the skull base. This approach requires cuts in three different planes, in comparison to conventional one-plane cranial osteotomies. A patient-personalized implant was created by injection of the polymethyl methacrylate (PMMA) into the previously printed 3D mold. Further, it was fixed to cover the defect. Follow-up CT scans confirmed a successful result – proper implant placement with most of the previous defect covered, apart from a minimum incongruity of the frontozygomatic suture due to difficulties regarding the osteotomy line. Postoperatively, the patient reported feeling well and eventually, started the adjuvant chemotherapy treatment.

Conclusion: This case highlights how a multidisciplinary approach results in performing cranioplasty with a patient-specific 3D implant used for cranial reconstruction, a procedure that marks next-generation personalized surgery.

Keywords: Biocompatible Materials; Computer-Aided Design; Craniotomy; Polymethyl Methacrylate; Printing, Three-Dimensional

BROKEN HEART SYNDROME: A CASE REPORT

Lucija Kasap[1], Nika Klarin[2], Eugenija Basioli Kasap[3]

[1] University of Split, Faculty of Medicine, Split, Croatia
[2] University of Zagreb, Faculty of Medicine, Zagreb, Croatia
[3] General Hospital Zadar, Zadar, Croatia

Corresponding author: lucia.kasap@gmail.com

Aim: Broken heart syndrome also known as stress cardiomyopathy is clinical syndrome characterized by an acute and transient left ventricul (LV) systolic and diastolic dysfunction often related to emotional or physical stress. It is suspected based on the clinical context, ECG abnormalitis, mild troponin elevation, significant elevation of serum natriuretic peptide (NT-proBNP), and exclusion of coronary obstruction on angiography. First described in 1990, it was named Takotsubo because the apical ballooning on echocardiography resembles a Japanese octopus trap. The symptoms are similar to those of patients with acute coronary syndrome, so initial diagnosis and treatment in the emergency department remain a challenge. With growing awareness, incidence is rising (15–30/100,000 annually), though the true rate remains underestimated.

Case report: A 58-year-old woman was admitted to the emergency department with respiratory insufficiency. She had been diving at 30 meters and surfaced correctly. At a depth of 3 meters, she suddenly experienced shortness of breath, without chest pain or loss of consciousness. She is a non-smoker and has had no significant medical history to date. On admission, she was tachycardic at 121/min, dyspnoic, with an oxygen saturation of 87%. Lung auscultation revealed diffuse crackles. High-resolution computed tomography showed bilateral pleural effusions and bilateral perihilar patchy ground-glass infiltrates in the lung parenchyma, along with thickened interlobular septa-findings suggestive of pulmonary edema. Laboratory tests showed elevated troponin (240 ng/L) and NT-proBNP (4544 pg/mL), indicating cardiac dysfunction. ECG demonstrated a global reduction of left ventricular function (35%) with preserved contractility of all basal segments, but hypokinesia of the mid and

apical segments, consistent with a diagnosis of Takotsubo syndrome. Coronary angiography showed normal findings of the epicardial arteries. With therapy consisting of diuretics, beta-blockers, and angiotensin-converting enzyme inhibitors, echocardiography after five days showed almost complete recovery of left ventricular systolic function.

Conclusion: Broken heart syndrome is an acute reversible heart failure syndrome that, although often self-limiting in clinical course, can be associated with serious complications. This cardiomyopathy represents a form of neurocardiogenic myocardial stunning and although a brain-heart connection has been established, the exact pathophysiological mechanisms remain unclear.

Keywords: Cardiomyopathy; Case Report; Takotsubo; Stress

WHEN A HUSKY HOWLS LIKE A WOLF: THE PANCREATIC PSEUDOTUMOR TRAP

Mirela Kolak[1], Matea Majerović[2]

[1] University of Zagreb, Faculty of Medicine, Zagreb, Croatia
[2] University Hospital Centre Zagreb, Department of gastroenterology and hepatology, Zagreb, Croatia

Corresponding author: mkolak@student.mef.hr

Aim: The aim of this case report is to emphasize the importance of considering immunoglobulin G4 (IgG4)-related disease, particularly autoimmune pancreatitis, in the differential diagnosis of pancreatic cancer. It underlines the clinical, radiological, and histopathological similarities between these conditions and the potential diagnostic pitfalls that may lead to misdiagnosis and unnecessary invasive treatment.

Case report: A 74-year-old patient presented to the hospital with diarrhea, lower abdominal pain, and painless jaundice. Further evaluation raised suspicion of a neoplastic process in the pancreas, as abdominal and pelvic computed tomography revealed a suspicious focal pancreatic lesion. The tumor marker Ca 19-9 was negative. Multiple attempts at histopathological confirmation of malignancy were inconclusive; however, cytology from endoscopic retrograde cholangiopancreatography described cells suspicious for adenocarcinoma. During endoscopic retrograde cholangiopancreatography, a stent was placed. Subsequently, surgical excision of the suspected pancreatic tumor and two liver segments was performed. Histopathological examination revealed no evidence of malignancy but instead reactive inflammatory changes consistent with IgG4-related disease. Intraoperatively, a firm infiltration of the entire pancreas – known as a "sausage-like pancreas" – was observed.

Conclusion: This case highlights the importance of considering IgG4-related disease as a differential diagnosis of pancreatic cancer, given the markedly different treatment strategies and outcomes. In this patient, painless jaundice, advanced age, and a pancreatic mass on computed tomography suggested malignancy. Furthermore, brush citology was suggestive of adenocarcinoma. However, it is important to bare in mind that citology may be false-positive in up to 5,4% of cases.

Keywords: Autoimmune pancreatitis; IgG4-related disease; inflammatory disease; painless jaundice; pancreatic cancer

SECONDARY RENAL AMYLOIDOSIS AS A COMPLICATION OF CROHN'S DISEASE: A CASE REPORT

Mirela Kolak[1], Dora Grgić[2]

[1] University of Zagreb, Faculty of Medicine, Zagreb, Croatia
[2] University Hospital Centre Zagreb, Department of gastroenterology and hepatology, Zagreb, Croatia

Corresponding author: mkolak@student.mef.hr

Aim: The aim of this case report is to highlight secondary renal amyloidosis as a rare but serious complication of Crohn's disease, illustrated by a 74-year-old patient who progressed to end-stage kidney failure requiring hemodialysis.

Case report: A 74-year-old female patient presented to the emergency department due to worsening kidney function and the need for hemodialysis. Findings included hyperkalemia (7.2 mmol/L), metabolic acidosis (pH

7.01), and dehydration. Creatinine levels were elevated (700 μmol/L), total proteins were low (42–54 g/L), and estimated glomerular filtration rate was 15 mL/min/1.73 m^2. The patient has had Crohn's disease since 2002 and has been treated with a series of biological therapies, including infliximab, ustekinumab, vedolizumab, adalimumab, and upadacitinib. She has also undergone multiple surgeries, the most recent being the creation of a unipolar ileostomy four months ago. She also has arterial hypertension.She was hospitalized and diagnosed with secondary renal amyloidosis by biopsy, presenting with nephrotic syndrome. The patient was discharged home after 8 days on once-daily low molecular weight heparin (LMWH) on non-dialysis days for thrombosis prevention due to nephrotic syndrome, as well as her chronic medications: upadacitinib, calcium carbonate, sodium bicarbonate, roxadustat, pantoprazole, bisoprolol, atorvastatin, and high-energy, high-protein complete liquid nutrition.

Conclusion: Secondary renal amyloidosis is a rare but severe complication of long-standing Crohn's disease that can lead to nephrotic syndrome and end-stage renal failure. Early recognition and monitoring of kidney function in patients with chronic inflammation are crucial to prevent progression and improve outcomes.

Keywords: Amyloidosis; Crohn Disease; Nephrotic Syndrome

S7. POSTER SESSION 3

BALLOON EUSTACHIAN TUBOPLASTY FOR REFRACTORY EUSTACHIAN TUBE DYSFUNCTION IN A PROFESSIONAL PILOT: A CASE REPORT

Luka Linarić[1], Lucija Lisak[1], Ana Lovrić[1], Petar Kruezi[1], Andro Košec[1,2]

[1] University of Zagreb, Faculty of Medicine, Zagreb, Croatia
[2] University Hospital Center Sestre Milosrdnice, Department of Otorhinolaryngology and Head and Neck Surgery, Zagreb, Croatia.

Corresponding author: lukalinaric7@icloud.com

Aim: Eustachian tube dysfunction (ETD) is a significant clinical concern in individuals exposed to rapid ambient pressure changes, particularly professional pilots. Affected patients typically present with otalgia, aural fullness, and transient hearing loss, all of which may impair operational performance and compromise flight safety. This case report aims to demonstrate the application of Balloon Eustachian Tuboplasty (BET), a minimally invasive procedure, in the management of chronic ETD unresponsive to conservative treatments.

Case report: A professional pilot presented with chronic ETD refractory to long-term conservative management, including nasal decongestants, corticosteroids, and manual pressure equalization manoeuvres. BET was performed under general anaesthesia. The intraoperative course and early postoperative period were monitored using tympanometry and standard otorhinolaryngological protocols. No intraoperative complications were observed, and the patient reported symptomatic improvement in the postoperative period. Follow-up tympanometry demonstrated normal middle ear ventilation, and during subsequent flight activity, the patient was able to equalize pressure effectively without any symptoms of barotrauma.

Conclusion: BET proved to be a safe and effective treatment for chronic EDT in a specific patient population such as professional pilots, whose occupational performance and safety rely on normal middle ear ventilation. This case report supports the potential role of BET as a standard therapeutic option in the management of barochallenge–related disorders.

Keywords: Barotrauma; Eustachian Tube; Middle Ear Ventilation; Pilot

ALCOHOL AND VINEGAR-INDUCED LEUKOCYTOCLASTIC VASCULITIS: A CASE REPORT

Lucija Lisak[1], Ana Lovrić[1], Luka Linarić[1], Petar Kruezi[1], Lucija Tomić Babić[2]

[1] University of Zagreb, Faculty of Medicine, Zagreb, Croatia
[2] Special Hospital for Medical Rehabilitation Naftalan, Dermatology, Ivanić-Grad, Croatia

Corresponding author: lucija.lisak@gmail.com

Aim: Leukocytoclastic vasculitis (LCV) is a small-vessel immune complex-mediated vasculitis often triggered by infections, medications or systemic diseases. Dietary triggers are rarely reported. This report describes a unique case of recurrent LCV associated with alcohol and alcohol-containing vinegar consumption to remind that it should be considered in the differential diagnosis to ensure timely and appropriate patient management.

Case report: 45-year-old otherwise healthy female patient reported to the dermatologist due to lesions on her lower extremities, which clinically resembled purpuric and vasculitic lesions. The clinical presentation of skin lesions raised suspicion of LCV. The patient denied any recent infections, use of medications or the presence of systemic illnesses which are well known triggers for LCV. Throat, nasal and gynecological swabs showed physiological flora. Laboratory tests were within normal limits and there were no signs indicative of internal organ involvement. Bacteriological and parasitological stool samples were unremarkable. Tumor marker levels were normal, antinuclear antibodies and rheumatoid factor were negative. Skin biopsy confirmed the diagnosis of allergic leukocytoclastic vasculitis. The patient noted lesion recurrence following social events where she consumed alcoholic beverages. The treatment she received included oral prednisone (30mg daily with gradual tapering until discontinuation) and betamethasone cream topically. Following treatment completion, the patient was advised to undergo an exposure test using the specific alcoholic liqueur she typically consumed during social events. Upon re-exposure to alcohol, lesions on her lower extremities reappeared within 24 hours. Despite complete abstinence from alcohol, the patient continued to experience occasional vasculitic flare-ups. Careful dietary tracking revealed a correlation with large quantities of salad dressed with alcohol-based vinegar. Complete resolution of vasculitic lesions occurred after strict elimination of both alcohol and alcohol vinegar from the diet. At the two-year follow-up, the patient remains asymptomatic and continues to abstain from both alcohol and alcohol-based vinegar.

Conclusion: This case highlights a rare but clinically significant dietary trigger for LCV. Alcohol is a known immunomodulator, and vinegar may contain residual ethanol or act as a chemical irritant. The case underscores the importance of detailed dietary history in recurrent vasculitis. In patients with idiopathic or recurrent LCV, clinicians should consider dietary triggers, including alcohol and alcohol-based condiments. Elimination may lead to complete remission.

Keywords: Alcohols; Biopsy; Vasculitis, Leukocytoclastic, Cutaneous

EOSINOPHILIC GRANULOMATOSIS WITH POLYANGIITIS FOLLOWING A DECADE OF ASTHMA: A CASE REPORT

Petar Kruezi[1], Ana Lovrić[1], Lucija Lisak[1], Luka Linarić[1], Marija Bakula[1,2]

[1] University of Zagreb, Faculty of Medicine, Zagreb, Croatia
[2] Division of Clinical Immunology and Rheumatology, Croatian Referral Centre for SLE and Related Diseases, University Hospital Centre Zagreb, Zagreb, Croatia

Corresponding author: pkruezi@gmail.com

Aim: Eosinophilic granulomatosis with polyangiitis (EGPA), or Churg-Strauss Syndrome, is a rare autoimmune disease. It presents with asthma, eosinophil-rich granulomatous airway inflammation, glomerulonephritis, and systemic vasculitis affecting small-sized vessels. Management typically involves glucocorticoids (GC), immunosuppressants (cyclophosphamide, azathioprine, methotrexate), and biologics such as rituximab for severe disease. This case report highlights the rarity of EGPA and the challenges associated with its diagnosis.

Case report: A 72-year-old female patient has a 10-year history of asthma with intermittent symptoms. She experienced progressive clinical deterioration following recovery from COVID-19 in 2024, with the onset of persistent dyspnea both at rest and on exertion. She was hospitalized the same year for prolonged fever, dyspnea and markedly elevated inflammatory markers. Despite multiple courses of antibiotics, symptoms did not improve;

however, she demonstrated a rapid clinical response after initiation of GC therapy. Immunological testing revealed positivity for PR3-ANCA, raising the suspicion of granulomatosis with polyangiitis. Therapy was initiated with mycophenolate mofetil, but later was discontinued due to medication intolerance. Treatment was continued with GCs. The clinical course was complicated by gallblader perforation, cholecystectomy was performed in 2024. CT imaging demonstrated abdominal abscesses in the area of the prior cholecystectomy and pancreatic tail, as well as pulmonary infiltrates, which on biopsy were identified as sterile granulomatous lesions. Abdominal abscesses regressed with antibiotic therapy. GCs and IVIG remained part of the treatment regimen, due to complicated course of the disease. Fibrobronchoscopy revealed pathologically altered bronchial mucosa, narrowing of the bronchial tree and limited bronchoscopic accessibility. Given the clinical course, diagnosis od EGPA was established and rituximab was introduced resultig in condition improvement.

Conclusion: This case highlights the diagnostic complexity of EGPA and underscores the importance of considering vasculitis in patients with late-onset asthma and unexplained systemic manifestations, particularly when symptoms evolve rapidly following infectious triggers such as COVID-19. Establishing the diagnosis of EGPA is particularly challenging, given its heterogeneous presentation, overlap with other eosinophilic and vasculitic disorders, and the absence of a single definitive diagnostic test.

Keywords: Asthma; Biopsy; Churg-Strauss Syndrome; Rituximab; Vasculitis

BEYOND THE CLASSROOM: DISCOVERING VULNERABLE GROUPS THROUGH CASE-BASED LEARNING

Lara-Nika Holjevac Stasiow[1], Ana Deškin[1], Tina Dušek[1,2]

[1] University of Zagreb, Faculty of Medicine, Zagreb, Croatia
[2] Clinical Hospital Centre Zagreb, Department of Endocrinology, Zagreb, Croatia

Corresponding author: lholjevac@student.mef.hr

Aim: The topic of vulnerable groups in healthcare is often addressed only briefly in medical education, despite its importance. A patient's social and economic circumstances significantly influence health outcomes, well-being, and clinical decision-making. Vulnerable groups are defined as those whose health is disproportionately affected by social, economic, or environmental disadvantages, stigma, discrimination, or limited access to healthcare. In Croatia, determinants such as poverty, older age, and geographic inequality are common. These sensitive and sometimes controversial topics are often excluded from the traditional curriculum. To address this gap, a targeted educational intervention was introduced within the Summer School of Island Medicine to educate medical students about vulnerable populations and highlight the importance of these issues in future practice.

The Summer School of Island Medicine is a five-day, hands-on program held on the island of Šolta for senior medical students and recent graduates, focusing on critical thinking and clinical decision-making in isolated settings. Students are divided into small groups and assigned clinical case reports involving vulnerable patients, with accompanying questions and guidelines for group presentations. Case scenarios include: a foreign worker with diabetes, highlighting language barriers and health insurance issues; a Roma minority woman facing fertility problems, emphasizing stigma and health disparities; an elderly rural patient with diabetic retinopathy, illustrating isolation and poverty; and a single parent with cancer caring for a child with Down syndrome, demonstrating complex vulnerability. These cases integrate medical knowledge with lessons on patient vulnerability, illustrating how social, economic, and cultural factors influence clinical outcomes. Each presentation is followed by an open discussion.

Small-group work over several days encourages students to exchange ideas and reflect on their perspectives, resulting in a deeper understanding and increased confidence in articulating their views. In an informal setting, participants are more open to new concepts and willing to share experiences. Using case reports to explore social and ethical topics not only makes learning more engaging but also enables students to effectively connect clinical knowledge with broader considerations, reinforcing the importance of these interconnections in their future practice.

Keywords: Education, Medical; Rural Health Services; Social Determinants of Health; Vulnerable Populations

INTERSCALENE BLOCK AS AN ANESTHETIC CHOICE IN ACUTE INTERMITTENT PORPHYRIA: A CASE REPORT

Katarina Jelečević[1], Petra Jurković[1], Luka Radić[1], Marinko Jelečević[2]

[1] Josip Juraj Strossmayer University of Osijek, Faculty of Medicine, Osijek, Croatia
[2] Clinical Hospital Center Osijek, Department of Anesthesiology, Clinic for Anesthesiology, Resuscitation and Intensive Care, Osijek, Croatia

Corresponding author: jelecevickatarina200@gmail.com

Aim: The interscalene block provides anesthesia by targeting the brachial plexus, commonly used for shoulder surgery. It is performed under ultrasound guidance between the anterior and middle scalene muscles. In patients with acute intermittent porphyria, the administration of anesthesia presents a challenge due to the risk of triggering acute attacks. This case report aims to illustrate the rationale for selecting the interscalene block as the preferred anesthetic technique in these patients.

Case report: A fifty-year-old female patient was admitted to the Department of Endocrinology for reevaluation of her general condition. She exhibited limited mobility and reported occasional headaches and dizziness. Twenty years earlier, she had been diagnosed with acute intermittent porphyria due to severe diffuse abdominal pain and gastrointestinal symptoms. In the same year, she experienced cardiorespiratory arrest. In recent years, she attended follow-up appointments irregularly and had several epileptic seizures accompanied by loss of consciousness. During her hospital stay, the patient fell and sustained a subcapital fracture of the humerus, after which she was transferred to the Department of Traumatology. Preoperative evaluation revealed that approximately twenty medications were contraindicated due to their potential to trigger porphyria attacks, necessitating particular caution in anesthetic selection. Therefore, an interscalene block was chosen by the anesthesiologist to minimize the use of systemic medications and reduce metabolic stress. The surgery was uneventful and free of complications. Dexamethasone used as an adjuvant prolonged analgesia for 16 hours; the patient remained in stable condition.

Conclusion: This case underscores the educational importance of recognizing safe anesthetic strategies for patients with rare metabolic disorders. It highlights the need for careful anesthetic selection in patients with comorbidities that increase the risk of complications. In this instance, the interscalene block ensured safe surgical management, provided effective intraoperative anesthesia and postoperative analgesia, and helped prevent the development of chronic pain.

Keywords: Analgesia; Anesthesia; Brachial Plexus Block; Humeral Fractures; Porphyria, Acute Intermittent

FAMILY ASPECTS OF X-LINKED ADRENOLEUKODYSTROPHY: A CASE REPORT

Josip Novak[1], Gordan Ćurin[1], Anela Novak[2]

[1] University of Split, Faculty of Medicine, Split, Croatia
[2] University Hospital Centre Split, Department of Endocrinology, Split, Croatia

Corresponding author: josip.novak01@gmail.com

Aim: To present a case of adrenomyeloneuropathy and discuss its clinical, genetic, and reproductive aspects within an affected family.

Case report: A 47-year-old male presented with adrenal insufficiency and progressive paraparesis leading to wheelchair dependence. Laboratory tests showed low serum cortisol and normal renin and potassium levels. Elevated concentrations of very long-chain fatty acids confirmed the diagnosis of adrenomyeloneuropathy caused by an ABCD1 gene variant [c.251C>T (p.Pro84Leu)]. Hydrocortisone therapy was initiated, resulting in partial neurological improvement and regained partial mobility, walking with a cane. Genetic counseling and testing revealed two heterozygous carrier daughters. The older daughter had an unplanned pregnancy and delivered a clinically healthy male child, whose genetic results are pending. The younger daughter underwent preimplantation genetic testing (PGT) for the ABCD1 gene in Belgium. Analysis of 11 embryos identified five unaffected, euploid embryos that were cryopreserved for future transfer. Since adrenoleukodystrophy follows an X-linked inheritance pattern, heterozygous carrier mothers have a 50% chance of transmitting the pathogenic variant to each child. Affected males transmit the altered ABCD1 gene to all daughters, who become carriers, and

to none of their sons. Understanding these transmission probabilities is crucial for family counseling and reproductive planning.

Conclusions: This case underscores the value of comprehensive genetic counseling, early diagnosis, and preimplantation genetic testing in managing X-linked disorders such as adrenoleukodystrophy. Multigenerational evaluation enables tailored reproductive decisions and improved outcomes for at-risk families. Importantly, this case highlights the educational potential of integrating genetic counseling into multidisciplinary patient care, emphasizing its role in fostering informed decision-making and patient engagement.

Keywords: Adrenoleukodystrophy; Adrenomyeloneuropathy; ABCD1 gene; Genetic counseling; Preimplantation genetic testing; X-linked disorders

AN OVERVIEW MULTI-LANGUAGE TRANSLATIONS AND VALIDATIONS OF THE UCLA SCTC GIT 2.0 QUESTIONNAIRE

Gordan Ćurin, Josip Novak

University of Split, Faculty of Medicine, Split, Croatia

Corresponding author: gordan.curin@mefst.hr

The UCLA SCTC GIT 2.0 is the most widely used patient-reported outcome instrument in systemic sclerosis research and clinical practice. It was developed to measure gastrointestinal symptoms and their impact on quality of life, providing a standardized approach to assessing gastrointestinal involvement in this complex multisystem disease. The questionnaire consists of 34 items grouped into seven domains – reflux, distension/bloating, diarrhea, fecal soilage/incontinence, constipation, emotional well-being, and social functioning. The aim of this overview was to compare the translations, cross-cultural adaptation, and psychometric performance of the UCLA SCTC GIT 2.0 in various language versions. Published validation studies from the Netherlands (Dutch), Italy, Croatia, Serbia, Portugal, Turkey, and Korea were reviewed. Across studies, the total GIT score consistently showed strong internal consistency and good test-retest reliability in all regions. However, domains such as diarrhea and fecal soilage/incontinence frequently showed lower reliability, especially in translated versions or among populations with milder gastrointestinal symptoms. These variations likely reflect cultural and linguistic nuances, differences in symptom prevalence, and sample size limitations. Overall, cultural factors, translation clarity, and methodological rigor emerged as key moderators of domain-level performance. Despite these differences, The UCLA SCTC GIT 2.0 remains a robust and versatile instrument for assessing gastrointestinal symptom burden and its impact on quality of life in systemic sclerosis. Continued refinement and region-specific adaptation will further enhance its accuracy and clinical usefulness across diverse populations.

Keywords: Gastrointestinal Diseases; Quality of Life; Surveys and Questionnaires; Reproducibility of Results; Scleroderma, Systemic

SILENT UNTIL THE BLEED: A CASE REPORT OF ACQUIRED HEMOPHILIA A

Ana Lovrić[1], Ena Ranković[2], Josipa Belev[2], Marija Miloš[3], Desiree Coen Herak[3], Ana Boban[1,2]

[1] University of Zagreb, Faculty of Medicine, Zagreb, Croatia
[2] University Hospital Centre Zagreb, Department of Hematology, Zagreb, Croatia
[3] University Hospital Centre Zagreb, Department of Laboratory Diagnostics, Zagreb, Croatia

Corresponding author: anasavrbana@gmail.com

Aim: Acquired hemophilia A (AHA) is a rare but potentially life-threatening bleeding disorder caused by autoantibodies against factor VIII (FVIII). It typically presents with spontaneous skin hematomas or excessive bleeding after even minor trauma. Delayed recognition and inadequate management can result in severe complications. Although it may be idiopathic, AHA is frequently associated with malignancy, autoimmune diseases, pregnancy, or certain medications. Treatment requires both hemostatic control and eradication of the inhibitor.

Case report: A 54-year-old woman with no personal or family history of bleeding presented with swelling and limited motion of the left knee two weeks after trauma. Examination revealed a large hematoma extending

from the knee to the lower leg. Suspected hemarthrosis prompted surgical incision, leading to excessive and prolonged bleeding. Laboratory results showed normocytic anemia (Hb 69 g/L), prolonged activated partial thromboplastin time (aPTT), and markedly reduced FVIII activity (1.5%), raising suspicion for AHA. Red blood cell transfusion was given, and treatment with corticosteroids and recombinant activated factor VII (rFVIIa) was initiated. The patient was transferred to a tertiary center where AHA was confirmed (FVIII <1%, FVIII inhibitor titer 53.8 Bethesda kIU/L). Immunosuppressive therapy with corticosteroids and rituximab was started, along with sequential hemostatic treatment (rFVIIa, FEIBA, and later emicizumab). Bleeding gradually subsided, although a large skin necrosis developed over the knee. During hospitalization, metastatic breast cancer was diagnosed as the likely underlying cause. After completing rituximab, FVIII activity normalized and inhibitors became undetectable within six weeks. Necrotic tissue from the knee was removed surgically, and the wound was managed by the Vacuum-Assisted Closure therapy to accelerate healing. The procedure went uneventful, without further bleeding symptoms. Hormonal treatment for the breast cancer was started.

Conclusion: This case highlights the importance of early recognition of AHA in patients presenting with unexplained bleeding and isolated prolonged aPTT. Timely diagnosis, along with prompt hemostatic and immunosuppressive therapy, are essential to prevent unnecessary invasive procedures and to improve outcomes in this rare but treatable condition.

Keywords: Acquired factor VIII deficiency; Autoantibodies; Autoimmunity; Blood Coagulation Disorders; Factor VIII

OPTIMIZING THE QUALITY OF LIFE IN AML: A CASE REPORT OF SUCCESSFUL TREATMENT IN A MULTIMORBID PATIENT

Petra Jurković[1], Katarina Jelečević[1], Danijela Mjeda[2]

[1] Josip Juraj Strossmayer University of Osijek, Faculty of Medicine, Osijek, Croatia
[2] Clinical Hospital Center Osijek, Department of Hematology, Osijek, Croatia

Corresponding author: petrajura28@gmail.com

Aim: Acute myeloid leukemia (AML) in older adults is often associated with poor prognosis, especially in the presence of multiple comorbidities. We present the case of a 75-year-old man with a highly complex medical history and a diagnosis of AML who, despite all odds, managed to maintain a high level of functionality and quality of life.

Case report: The patient had a history of arterial hypertension, bronchial asthma, post-traumatic stress disorder, type 2 diabetes, chronic deep vein thrombosis (DVT), hyperlipidemia, and left renal adenocarcinoma, for which a nephrectomy was performed in July 2024. He also suffered from angina pectoris, for which he received two stents and a pacemaker in 2022 due to a second-degree AV block. In June 2024, acute myeloid leukemia with dysplastic changes was diagnosed. Given his age and comorbidities, the patient was not a candidate for aggressive chemotherapy, and treatment with venetoclax and azacitidine was initiated in September 2024. This treatment protocol has been available in Croatia for this patient group since 2020. Already after the third cycle of therapy, remission of the disease was confirmed through clinical evaluation. The patient is receiving therapy through a day hospital and has not experienced complications requiring hospitalization. A urological follow-up was also performed, with no evidence of relapse or metastatic spread of the previously diagnosed renal adenocarcinoma. To date, he has received 12 cycles of therapy, is in good general condition, and has stable laboratory findings related to AML. Remission of the disease persists, as confirmed by follow-up cytological bone marrow aspiration.

Conclusion: This case illustrates how access to novel acute myeloid leukemia therapies can significantly improve survival and maintain quality of life, even in patients with multiple comorbidities. It underscores the importance of making effective treatment options more broadly available in clinical practice.

Keywords: Leukemia, Myeloid, Acute; Bone Marrow; Immunophenotyping; Leukopenia; Pancytopenia

FROM FATAL TO SURVIVABLE: CLOT IN TRANSIT TREATED BY MECHANICAL THROMBECTOMY

Tamara Stanojlović[1], Tomislava Tretinjak[1], Dražen Mlinarević[1,2], Tajana Turk[1,3]

[1] Josip Juraj Strossmayer University of Osijek, Faculty of Medicine, Osijek, Croatia
[2] University Hospital Centre Osijek, Cardiology Department, Osijek, Croatia
[3] University Hospital Centre Osijek, Clinical Department of Diagnostic and Interventional Radiology, Osijek, Croatia

Corresponding author: stanojlovict4@gmail.com

Aim: Clot in transit (CiT) is a life-threatening condition in the setting of acute pulmonary embolism. It represents a free-floating thrombus in the right heart chambers that can potentially embolize abruptly with a fatal outcome. Management varies from anticoagulation, thrombolysis, surgical embolectomy and catheter-based interventions but the optimal approach is unclear. This report aims to present a case of massive pulmonary embolism complicated by a CiT, successfully treated with urgent mechanical thrombectomy.

Case report: A 70-year-old woman presented to the emergency department with vomiting and worsening generalized weakness, along with fatigue and exertional dyspnoea over the past two months. Her medical history included arterial hypertension, type 2 diabetes mellitus, previous pulmonary embolism and popliteal vein thrombosis. One month earlier, she had undergone surgery for obstructive biliary disease. Upon admission she was oriented, tachypnoeic and diaphoretic. Laboratory findings showed leucocytosis, renal insufficiency, metabolic acidosis and severe hyperglycaemia (29.3 mmol/L). Cardiac biomarkers were markedly elevated (high-sensitivity troponin I 646 ng/L, NT-proBNP 9108 ng/L) and D-dimer was significantly increased (11,844 µg/L FEU). Computed tomography pulmonary angiography revealed a massive pulmonary embolism with extensive filling defects and dilatation of the pulmonary trunk and right heart. Additionally, a large thrombus was seen in the right atrium, prolapsing into the right ventricle. The CiT was also seen on echocardiography, along with signs of acute pulmonary hypertension. Since the patient was in obstructive shock and thrombolysis was contraindicated, urgent mechanical thrombectomy was performed using a transfemoral approach with the Inari FlowTriever system. A large amount of thrombotic material was aspirated from the right heart and main pulmonary arteries, leading to rapid stabilization of her vital signs (110/60 mmHg without vasopressors, pulse 75/min, oxygen saturation 99%). Follow-up echocardiography showed normal right ventricular size and function, no residual thrombus, pulmonary artery pressure of 35 mmHg and preserved left ventricular ejection fraction (55 %). Her recovery was uneventful, and she was discharged in good condition on dabigatran and chronic therapy.

Conclusion: CiT is a condition with a very high mortality rate, but in this patient, early recognition and emergency mechanical thrombectomy with effective thrombus extraction saved the patient's life. This report underscores the importance of early diagnosis, hemodynamic assessment and multidisciplinary decision-making in managing massive pulmonary embolism with a CiT.

Keywords: Heart Atria; Heart Catheterization; Pulmonary Embolism; Thrombectomy

TIME- AND SEX-DEPENDENT PROFILES OF ACUTE INTRANASAL INSULIN DISTRIBUTION

Marko Šarić, Ana Knezović, Antonia Krsnik, Ana Babić Perhoč, Davor Virag, Jan Homolak, Jelena Osmanović Barilar

University of Zagreb, Faculty of Medicine, Department of Pharmacology, Zagreb, Croatia

Corresponding author: smarko046@gmail.com

Aim: The intranasal insulin (INS) route enables direct delivery to the central nervous system, thereby minimising side effects and potentially enhancing cognitive function in patients with diabetes and Alzheimer's disease. However, the exact distribution of insulin within central and peripheral tissues is not yet fully understood. This study examines the time- and sex-dependent distribution and impact of INS in plasma, cerebrospinal fluid (CSF), as well as in the nasal respiratory (RE) and olfactory (OE) epithelia, olfactory bulb (OFB), hypothalamus (HPT), and hippocampus (HPC).

Materials and methods: Both female and male Wistar rats received an intranasal injection of insulin (2 IU) and were sacrificed at 3, 7.5, 15, 30, 60, and 120 minutes post-administration. Untreated animals served as controls. Assay kits measured insulin levels in plasma, CSF, RE, OE, OFB, HPT and HPC.

Results: Plasma and CSF insulin levels remained unchanged. In the RE, insulin spiked at 3 minutes and remained elevated for up to 15 minutes, after which it declined and returned to baseline for the subsequent time points. In the OE, insulin levels peaked at 3 minutes and then declined to normal levels by 30 minutes. Following administration, insulin concentrations in male rats increased sharply within 3 minutes in the OFB, HPT, and HPC. The elevation persisted for 15 minutes in the HPT and for 7.5 minutes in the OFB, whereas in the HPC, insulin levels began to decline before the 7.5-minute mark. However, in female rats, no significant increase has been observed in those regions.

Conclusions: The findings demonstrate that intranasal insulin is rapidly and efficiently distributed to the nasal epithelia in both male and female rats, underscoring the nasal mucosa's potential as an effective absorption site even at minimal doses. The absence of significant alterations in plasma and CSF insulin concentrations supports the notion that intranasal delivery primarily targets the central nervous system (CNS) while minimizing systemic exposure, thereby reducing the risk of peripheral insulin-related side effects. Moreover, in male rats, a significant increase in insulin levels was observed in the OFB, HPT, and HPC regions; however, in female rats, no such increase was detected during the observed time period.

Keywords: Administration, Intranasal; Rats, Wistar; Central Nervous System; Insulin; Sex Factors

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ACUTE LIVER INJURY WITH SUBMASSIVE NECROSIS DUE TO DRUG-INDUCED LIVER INJURY – A CASE REPORT

Eva Starešinić[1], Tajana Filipec Kanižaj[1,2], Nika Sučić[1], Luka Brekalo[3], Roko Pirović[3], Borna Starešinić[4]

[1] University of Zagreb, Faculty of Medicine, Zagreb, Croatia
[2] University Hospital Merkur, Department of Gastroenterology, Zagreb, Croatia
[3] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[4] Catholic University of Croatia, Faculty of Medicine, Zagreb, Croatia

Corresponding author: staresinic.eva@gmail.com

Aim: The aim of this presentation is to describe a case of acute liver injury with submassive hepatic necrosis due to drug-induced liver injury (DILI), emphasizing diagnostic challenges and therapeutic approach.

Case Report: We report a 36-year-old female admitted for evaluation of acute hepatic lesions initially presented with nausea, vomiting, dark urine, and pain in the right upper quadrant. Past history included recent treatment for shoulder bursitis with over-the-counter analgesics; no history of alcohol or drug abuse. On admission, the patient was alert, afebrile, hemodynamically stable, without encephalopathy. Laboratory tests revealed severe hepatocellular injury (AST 3051 U/L, ALT 2538 U/L, GGT 320 U/L), hyperbilirubinemia (total bilirubin 153 μmol/L), coagulopathy (INR 2.31), and mild anemia. Imaging studies (ultrasound, CT, MRCP, Doppler) showed a liver of normal size and homogeneous echotexture without focal lesions, no splenomegaly, no intra- or extrahepatic biliary dilatation, no vascular thrombosis, minimal free fluid, and no significant lymphadenopathy. There was no evidence of cholestasis. Extensive infectious, autoimmune, and metabolic workup was negative. Liver biopsy demonstrated submassive necrosis of hepatocytes consistent with DILI. The patient was treated with supportive care including hepatoprotective diet, analgesics as needed, and glucocorticoids (1 mg/kg body weight). Gradual clinical and biochemical improvement was observed, with a follow-up scheduled for further outpatient evaluation.

Conclusion: This Case Report highlights the importance of continuous education and early recognition of potential detrimental side effects of drugs, considering DILI in patients presenting with acute hepatocellular injury and coagulopathy after exposure to potentially hepatotoxic medications. Early recognition, exclusion of other causes, liver biopsy, and timely supportive treatment are crucial for favourable outcomes. Multidisciplinary approach and close follow-up remain essential for recovery and for prevention of further liver damage.

Keywords: Corticosteroids/therapeutic use; Drug-Induced Liver Injury; Liver Biopsy; Liver Failure, Acute; Liver Necrosis

PREGNANCY COMPLICATED BY INTRAHEPATIC CHOLESTASIS SUCCESSFULLY MANAGED WITH URSODEOXYCHOLIC ACID – A CASE REPORT

Nika Sučić[1], Tajana Filipec Kanižaj[1,2], Eva Starešinić[1], Luka Brekalo[3], Roko Pirović[3]

[1] University of Zagreb, Faculty of medicine, Zagreb, Croatia
[2] University hospital Merkur, Department of gastroenterology, Zagreb, Croatia
[3] University of Rijeka, Faculty of medicine, Rijeka, Croatia

Corresponding author: nsucic@student.mef.hr

Aim: Intrahepatic cholestasis of pregnancy (ICP) is a major cause of abnormal liver function in pregnancy. It is a reversible disorder marked by intense pruritus (usually in the second or third trimester), elevated liver enzymes, increased postprandial bile acid concentrations (>11 μmol/L), and spontaneous symptom resolution after delivery. The main symptom is maternal pruritus, while the greatest concern lies in fetal risks such as spontaneous or preterm labor, intrapartum asphyxia, and intrauterine fetal demise. The pathogenesis of ICP is multifactorial, involving genetic, environmental, and hormonal factors, and hormone replacement therapy may contribute to its development. The aim of this report is to present a rare case of ICP with complete remission following treatment with ursodeoxycholic acid (UDCA).

Case report: A 34-year-old woman in the 8th week of pregnancy, conceived via in vitro fertilization, with a history of myomectomy and bilateral inguinal hernia repair in childhood, was referred due to rising liver enzymes and severe pruritus. On admission she was afebrile, without jaundice, but with multiple painless hematomas on the thighs. Laboratory tests showed markedly elevated liver enzymes (AST up to 582 U/L, ALT up to 842 U/L) and bile acids (up to 358 μmol/L) with normal bilirubin levels and an unremarkable liver and biliary ultrasound. Viral hepatitis, metabolic and autoimmune liver diseases, as well as congenital thrombophilias were excluded, and a viable intrauterine pregnancy was confirmed. The diagnosis of ICP was established and treatment with UDCA 250 mg twice daily was initiated, together with symptomatic antipruritic therapy and hepatoprotective dietary measures. Follow-up revealed a gradual decline in bile acids and liver enzymes, accompanied by resolution of pruritus and a stable obstetric course without disease progression or fetal complications.

Conclusion: This case report highlights the importance of education, early recognition, and a multidisciplinary approach in managing ICP, especially with the growing number of pregnancies achieved through assisted reproductive techniques. Although often insufficient, in this case UDCA achieved full biochemical and clinical remission, enabling a favorable obstetric and perinatal outcome.

Keywords: Case Report; Intrahepatic Cholestasis of Pregnancy; Pregnancy; Pruritus; Ursodeoxycholic Acid

A RARE CASE REPORT OF UROLITHIASIS PRESENTING AS AN ACUTE ABDOMEN

Iva Topić

Dom zdravlja "Ante Franulović" Vela Luka, Lastovo, Hrvatska

Corresponding author: ivatopic99@gmail.com

Aim: Kidney stones are clusters of crystals that form from substances in urinary tract. Kidney stones are formed within the kidneys, and this is called nephrolithiasis. Urolithiasis is a condition that occurs when these stones exit the renal pelvis and move into the remainder of the urinary collecting system, which includes the ureters, bladder, and urethra. Symptoms of urolithiasis (kidney stones) include sharp pain in the back, side, lower abdomen, or groin, nausea, vomiting, and blood or pain during urination.

Case report: A 63-year-old male patient contacted the T1 emergency medical team due to acute-onset abdominal pain localized in the lower right quadrant. The pain appeared a few hours prior and is rated 10/10 on the VAS scale. The pain is described as sharp and cutting in character, with no relief in any position. The patient reports normal urination; his last bowel movement was last night. He has nausea but has not vomited. On examination, the patient appears pale, tachypnoeic, tachycardic, and hypertensive (he did not take his antihypertensive medication this morning). The body is in muscular spasm. Abdominal inspection shows hypoactive bowel sounds. There is marked tenderness in the right lower quadrant. Bilateral kidney percussion test is negative. The patient was referred to the Emergency Department (OHBP) of Dubrovnik General Hospital for further evalua-

tion and to confirm the suspected diagnosis of appendicitis via ultrasound. The abdominal ultrasound revealed no abnormalities; all abdominal organs, including the kidneys and the remain of the urinary tract accessible to sonography, appeared normal. A subsequent CT scan demonstrated the presence of a nephrolith in the distal ureter, in the projection of the appendix. A JJ ureteral stent was placed, and antibiotic therapy was initiated. Extracorporeal shock wave lithotripsy (ESWL) is planned in the near future.

Conclusion: The presence of a nephrolith within the distal urinary tract can be an extremely painful condition and must be carefully differentiated from an acute abdomen, as it may rarely present with similar clinical features. This case illustrates an uncommon clinical presentation of distal ureteral lithiasis mimicking acute appendicitis. The aim of this case report is to highlight the importance of radiological diagnostics, which – despite a detailed medical history and thorough physical examination – revealed a condition that did not require urgent surgical intervention.

Keywords: Abdomen, Acute; Appendicitis; Kidney Calculi; Tomography

CEREBRAL INFARCTION IN A PATIENT WITH A HISTORY OF GANGLIOGLIOMA RESECTION: A CASE REPORT

Leonarda Čupić[1], Gordan Ćurin[1], Krešimir Čaljkušić[1,2]

[1] University of Split, Faculty of Medicine, Split, Croatia
[2] Clinical Hospital Center Split, Neurology, Split, Croatia

Corresponding author: lc72058@mefst.hr

Aim: Highlighting of a multidisciplinary approach, including intensive care management, neurosurgical intervention, and rehabilitation, in achieving a favorable functional outcome.

Case report: Case presentation of a 20-year-old male with a history of prior ganglioglioma resection, admitted on 24.01.2024. to the Neurology Intensive Care Unit due to an acute ischemic stroke. CT angiography demonstrated an occlusion of the right middle cerebral artery. Mechanical thrombectomy was attempted multiple times without significant success, although collateral circulation was preserved. All intensive care measures, including anti-edema therapy, were instituted. Follow-up brain CT scans on 22.01 and 24.01. showed demarcation of the ischemic lesion, edema of the right hemisphere, compression of the right lateral ventricle, and progression of subfalcine herniation to the left, with the development of early uncal herniation. In agreement with the neurosurgeon, urgent decompressive craniectomy was indicated and performed on 24.01. In the following days, the patient was gradually taken off the ventilator and was successfully extubated on 30.01. Upon awakening, he followed simple commands and exhibited left-sided motor deficit. During the rest of the stay, his general condition stabilized and his neurological status gradually improved. After discharge, a left-sided spastic hemiparesis persisted. After rehabilitation and physical therapy, on 09.04.2025 the patient underwent reconstructive surgery for the cranial defect resulting from the decompressive craniectomy, with an uneventful postoperative course. At discharge, the patient was without subjective complaints, in good general condition, with a satisfactory functional outcome. On 18.07.2025, approximately 18 months after the initial stroke, the patient was readmitted due to episodes of instability, vertigo, and headaches. An emergency CT scan of the brain was performed upon hospital admission. Compared with previous scans, there is no deterioration, the findings remained unchanged. Symptoms were associated with side effects of ongoing antiepileptic therapy. During hospitalization, antiepileptic therapy was adjusted, and supportive management led to improvement in symptoms.

Conclusion: This case highlights the critical role of a multidisciplinary approach in managing complex neurovascular patients. Coordination between neurology, neurosurgery, intensive care, and rehabilitation teams was essential in achieving a favorable functional outcome, managing complications, and ensuring long-term recovery. Early recognition, timely surgical intervention, and structured rehabilitation were key factors in the patient's successful recovery.

Keywords: Cerebral Infarction; Intensive Care Units; Neurology; Rehabilitation; Young Adult

ACUTE GENERALIZED TONIC-CLONIC SEIZURES INDUCED BY ZOPICLONE WITHDRAWAL: A NEUROPSYCHIATRIC CASE REPORT

Ida Štimac[1], Darko Rasnek[2], Valentino Rački[3], Andrej Belančić[4,5]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] General Hospital Pula, Department of Emergency Medicine, Pula, Croatia
[3] University of Rijeka, Faculty of Medicine, Department of Neurology, Rijeka, Croatia
[4] Clinical Hospital Centre Rijeka, Department of Clinical Pharmacology, Rijeka, Croatia
[5] University of Rijeka, Faculty of Medicine, Department of Basic and Clinical Pharmacology with Toxicology, Rijeka, Croatia

Corresponding author: ida.stimac@gmail.com

Aim: Non-benzodiazepine hypnotics (Z-drugs), such as zopiclone, are widely prescribed for short-term management of insomnia due to their rapid onset and favorable pharmacokinetics. The aim of this report is to present a case highlighting the potential adverse effects associated with long-term Z-drug use. Its continued use may lead to dependence, tolerance, and withdrawal syndrome, which may manifest with severe neuropsychiatric complications, including epileptic seizures.

Case report: We present a case of a 71-year-old man who developed recurrent generalized tonic-clonic seizures following abrupt cessation of chronic high-dose zopiclone use. The patient had been self-administering zopiclone at three times the prescribed dose (22.5 mg daily) for over a year. After suddenly discontinuing the drug, he experienced progressive neurological symptoms, including somnolence, photophobia, and transient aphasia, culminating in a generalized tonic-clonic seizure. Upon emergency evaluation, neurological and psychiatric assessments initially excluded major psychopathology. However, after recurrent seizure episodes and the exclusion of vascular, infectious, and neoplastic causes via computed tomography (CT) and lumbar puncture, zopiclone withdrawal syndrome was suspected. Clinical pharmacology consultation confirmed the diagnosis, highlighting the well-documented risk of severe withdrawal symptoms, including seizures, anxiety, hyperacusis, hallucinations, and autonomic instability. The patient was stabilized with diazepam therapy and referred for psychiatric follow-up to manage withdrawal and prevent future complications.

Conclusion: This case underscores the potential for life-threatening withdrawal symptoms following abrupt discontinuation of Z-drugs, particularly in patients with prolonged and high-dose use. It highlights the necessity of cautious prescription practices, gradual dose tapering, and a multidisciplinary approach involving neurology, psychiatry, and clinical pharmacology to optimize patient safety and prevent adverse outcomes.

Keywords: Generalized tonic-clonic seizures; Hypnotic dependence; Neuropsychiatric complications; Pharmacovigilance; Zopiclone withdrawal

TREATMENT OF AN EPIDURAL ABSCESS CAUSED BY ACUTE SINUSITIS – IS SURGICAL APPROACH ALWAYS NECESSARY? – A CASE REPORT

Klara Cifrek[1], Marko Velimir Grgić[2]

[1] University of Zagreb, Faculty of Medicine, Zagreb, Croatia
[2] Sestre milosrdnice University Hospital Center, Clinic for otorhinolaryngology and head and neck surgery, Zagreb, Croatia

Corresponding author: klara.cifrek@gmail.com

Aim: Acute sinusitis is an infection of the paranasal sinuses usually caused by viruses that lasts less than 12 weeks. It is prevalent in all age groups. An estimated 5-10% of viral sinusitis in children develop into bacterial infections. Uncommon and potentially fatal complications occur when the infection spreads to the periorbital region and the brain. This case report aims to describe a severe complication of acute sinusitis and how it was treated.

Case Report: The patient is a 9-year-old girl with no previous medical history. She presented with a fever of 38.2°C, cough, rhinorrhea, and severe swelling of the left eye. She was transferred from another hospital where she had been prescribed ceftriaxone and clindamycin. CT of the orbits showed preseptal orbital cellulitis of the left eye and extensive pansinusitis, which prompted endoscopic sinus drainage to be performed. Staphylococcus aureus was isolated, which required adjustment of treatment to ceftriaxone and flucloxacillin. Due to lack of

improvement, a postoperative MRI was performed, which showed an intraorbital abscess and an epidural abscess in the right frontal paramedial region measuring 13x5x14 mm. The patient exhibited no neurological symptoms. The multidisciplinary team consisting of an otorhinolaryngologist, an oculoplastic surgeon, a neurosurgeon, a pediatrician and an infectologist decided the best course of action was to perform a medial and lateral orbitotomy and endoscopic orbital decompression, along with intravenous antibiotics followed by a prolonged course of oral antibiotics. The MRI performed after 4 weeks showed a significant regression of the epidural abscess to a size of 3 mm. At a follow-up examination two years later, the patient was completely free of symptoms and sequelae of the disease.

Conclusion: Although the most common treatment for abscesses larger than 10 mm is surgical drainage, sometimes treatment of the causative process – indirect drainage and appropriate antimicrobial therapy – results in regression of the abscess with lower morbidity than a surgical approach.

Keywords: Anti-Bacterial Agents; Epidural Abscess; Orbital Cellulitis; Sinusitis; Staphylococcus aureus

PERIOPERATIVE CHALLENGES IN OBSTRUCTIVE SIGMOID COLON ADENOCARCINOMA: A CASE REPORT

Tin Plaftak[1], Mirela Kolak[1], Daniela Bandić Pavlović[1,2]

[1] University of Zagreb, Faculty of Medicine, Zagreb, Croatia
[2] University Hospital Centre Zagreb, Clinic for Anesthesiology, Reanimatology, Intensive Care and Pain Managment, Zagreb, Croatia

Corresponding author: plaftak.tin@gmail.com

Aim: To present the diagnostic and therapeutic challenges in a high-risk patient with obstructive sigmoid colon adenocarcinoma complicated by sepsis and multiorgan dysfunction, emphasizing the perioperative risk and importance of multidisciplinary management.

Case report: An 80-year-old patient with a history of persistent atrial fibrillation with a thrombus in the left auricle since 2017, cerebrovascular insult in 2006, and dyslipidemia presented to the Emergency Department at University Hospital Centre with mechanical ileus, bradycardia, hypotension, metabolic acidosis, hyperkalemia, and icteric skin. The first round of blood tests showed signs of acute kidney injury – elevated creatinine, urea, and lowered estimated glomerular filtration rate necessitating continuous veno-venous hemodialysis. Imaging and clinical findings were consistent with a stenotic neoplastic process in the sigmoid colon causing mechanical ileus. Computed tomography confirmed tumor in sigmoid colon and bilateral pleural effusions. Following an emergency Hartmann's procedure, the patient was admitted to the intensive care unit sedated, mechanically ventilated, and initially hemodynamically stable. Postoperatively, the patient developed hemodynamic instability due to severe bleeding, requiring urgent revision surgery with crystalloids, colloids, blood products, fibrinogen, and prothrombin complex replacement and vasopressor support. In the postoperative course, the patient was respiratory sufficient, extubated and oxygenation was continued by nasal catheter. Additional difficulties included positive blood cultures, urinary tract infection, and fungal colonization, all of which required a series of antimicrobial therapies based on microbiological results. With adequate hydration and diuretics, sufficient diuresis has been achieved, and continuous veno-venous hemodialysis was discontinued after 3 days. Follow-up computed tomography showed partial regression of pleural effusion and no signs of pneumothorax, although basal pulmonary infiltrates persisted. Despite severe comorbidities and occurred complications, gradual clinical stabilization was achieved, and the patient was discharged from the intensive care unit.

Conclusion: This case illustrates the complexity of managing malignant colon obstruction in a patient with multiple severe comorbidities. The perioperative course was marked by life-threatening complications, including postoperative hemorrhage, sepsis, and renal failure. This highlights the necessity of an individualized and multidisciplinary approach in the management of critical surgical patients.

Keywords: Acute Kidney Injury; Ileus; Sepsis; Sigmoid Neoplasms

STUCK IN TRANSIT: AN UNUSUAL ESOPHAGEAL OBSTRUCTION: A CASE REPORT

Lucija Žeželj[1], Hannah Žiganto[1], Domagoj Mičetić[1,2], Goran Poropat[1,2]

[1] University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2] Clinical Hospital Center Rijeka, Department of Gastroenterology, Rijeka, Croatia

Corresponding author: zezeljlucija555@gmail.com

Aim: Suicide attempts by foreign body ingestion are a rare but serious form of self-harm, particularly in individuals with underlying psychiatric conditions. This case report describes a unique instance of a suicide attempt by the ingestion of a large metallic object.

Case report: A 21-year-old male with a documented history of mild intellectual disability and behavioral disorders was admitted to the Emergency Room following a suicide attempt. The patient had intentionally swallowed a 4-cm metal cross. The chief complaint was an inability to swallow, without fever, chest pain, and shortness of breath. Radiographic imaging confirmed the presence of a high-density foreign body lodged in the proximal third of the esophagus. Laboratory tests and coagulation parameters were within normal range. Endoscopic removal under general anesthesia was successfully completed without complication using a snare, and no oesophagal perforation was detected. The patient was discharged the same day, with a recommendation for psychiatric care.

Conclusion: This case represents an extremely rare and clinically challenging suicidal behavior. It highlights the crucial role of diagnostic and therapeutic endoscopy in managing complex oesophagal foreign bodies. The successful and non-invasive endoscopic extraction prevented more invasive surgical procedures, reinforcing the utility of this technique. This outcome further emphasizes the need for a multidisciplinary approach, combining rapid medical intervention with long-term psychiatric management to address the underlying psychological vulnerabilities and prevent future self-harm incidents.

Keywords: Esophagus; Foreign Bodies; Mental Disorders; Suicide

DERMART

Lucija Žeželj

University of Rijeka, Faculty of Medicine, Rijeka, Croatia

Corresponding author: Lucija Žeželj, zezeljlucija555@gmail.com

The *DermArt* project is an innovative initiative developed by medical students from the FOSS MEDRI association. Combining educational, scientific, and social elements, it provides students with the opportunity to collaborate with peers and professional staff, developing essential social and communication skills for their future medical careers. The main goal of *DermArt* is to train medical students to effectively transfer knowledge and engage more deeply in educational work with young people, particularly those in elementary and high school. The project introduces a dermatological approach to common skin issues and educates adolescents on proper skincare, helping them understand and manage the skin changes that occur during puberty. The project has two main components. The first takes place at the Department of Dermatovenerology, within the dermatological cosmetology unit at the University Hospital Centre Rijeka, where students gain hands-on experience under the guidance of dermatology specialists. The second component focuses on educational outreach, where students conduct interactive workshops in schools. These workshops cover the structure and function of the skin, different skin types, common changes during adolescence, and proper skincare habits, including the effects of hygiene and nutrition. In the final part, each participant undergoes a personalized facial analysis using the API 100 device, measuring hydration, skin type, acne, sun exposure effects, and sensitivity. Through these activities, students expand their dermatological knowledge while gaining experience in working with children and intergenerational teaching. They also develop soft skills such as empathy, communication, and public speaking, and have the chance to explore dermatology or deepen an existing interest, preparing them for future medical practice. As the main beneficiaries are young people facing puberty-related skin changes, *DermArt* educates them in a professional yet approachable way about their skin, routines, and facial treatments. Beyond medical knowledge, the project addresses the psychological impact of visible skin conditions, encourages open dialogue, normalizes these issues, and fosters an inclusive environment that promotes self-confidence and a positive body image.

Keywords: Health; Knowledge; Puberty; Skin; Students

CLOSET OF LOVE

Angelina Krmpotić, Teodora Pilat, Tiyya Selimović, Goran Hauser

University of Rijeka, Faculty of Medicine, Rijeka, Croatia

Corresponding author: angelina.krmpotic@student.uniri.hr

Closet of Love is a student-led humanitarian and sustainability initiative launched in 2022 by the students of the Faculty of Medicine at the University of Rijeka, currently coordinated by FOSS MEDRI. Rooted in sustainability, community engagement and education, the project fosters long-term behavioural change and environmental responsibility. Over a two week donation drive, students and citizens contribute gently used clothing, shoes and accessories, which are sorted into high-quality pieces for resale at the flea market, practical items for the *Depaul Homeless Shelter*, and damaged textiles for recycling. This closed-loop system reduces waste, supports vulnerable groups and funds humanitarian causes. A unique part of the project are the upcycling initiatives *No Scrub Left Behind* and *Dr. Stitch*. Medical professionals donate used scrubs that are transformed into reusable tote bags by Staša Design and embellished with a Rijeka based academic painter Mirna Sišul. Dr Stitch engages children at the Natural History Museum of Rijeka in creating handmade pencil cases and bracelets. Both initiatives embody a minimal waste philosophy, promote sustainable and raise additional funds for charity. Closet of Love challenges stereotypes surrounding second-hand clothing, raises awareness of the environmental and social impacts of fast fashion and encourages responsible consumption. Through its flea market, the project creates a closed loop of sustainability, recycling and humanitarianism, while motivating students and citizens to develop new habits and embrace a more humane way of life. Participation is inclusive, allowing support through donations, volunteering or symbolic purchases. Each year, project engages around 40 volunteers and welcomes approximately 1,000 visitors to its flea market. Over the four years, the project has raised a total of 4,000 euros and has created and sold 80 tote bags made from donated medical scrubs. Funds collected have supported: the Pediatric Oncology Department (Rijeka University Hospital), the Center supporting individuals with mobility challenges, the association *Koga Briga* and the Center for Rehabilitation *Slava Raškaj*. Closet of Love demonstrates how small, local actions can generate meaningful change by integrating education, creativity and practical solutions, while building a culture in which sustainability and compassion go hand in hand.

Keywords: Altruism; Charities; Community Participation; Recycling; Sustainable Development

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